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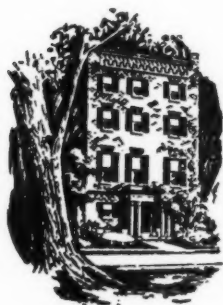
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OCTOBER, 1952



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The AFA

The American Forestry Association, publishers of *American Forests*, is a national organization—independent and non-political in character—for the advancement of intelligent management and use of forests and related resources of soil, water, wildlife and outdoor recreation. Its purpose is to create an enlightened public appreciation of these resources and the part they play in the social and economic life of the nation. Created in 1875, it is the oldest national forest conservation organization in America.

American FORESTS

PUBLISHED BY THE AMERICAN FORESTRY ASSOCIATION

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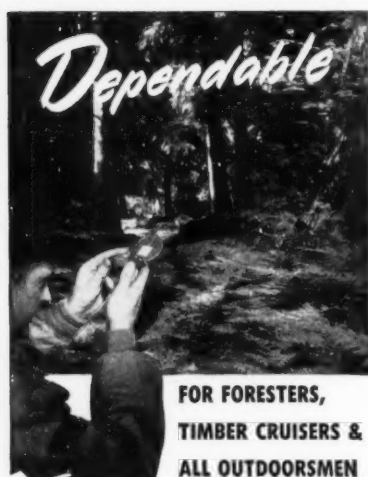
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Cover

Autumn is beautiful in the Great Smokies—at tests the color camera of Sebastian Sommers, North Carolina News Bureau staff. Many picnickers, like those on the cover, have availed themselves of this site near Grandfather Mountain, to view the everchanging reds and golds and greens of fall in one of the nation's most colorful areas. Such views are in store for those attending the AFA's 77th Annual Meeting, October 12-15. We are indebted to the North Carolina Development Commission for loan of the color plates and to Champion Paper and Fibre Company for bearing the printing expense of the cover.



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American FORESTS Forum

Looking Ahead—Sportsmen who decry the increasing number of "No Hunting" signs posted throughout their favorite game haunts will do well to read ARTHUR PRIAULX' *Hunter's Paradise Imperiled* in the November issue. Priaulx cites a wealth of evidence to show that a vast number of the nation's Tree Farmers go out of their way to be of service to hunters who visit their lands, only too often to suffer shameful treatment and abuses from the very ones they lend a helping hand. On the rib tickling side, you'll find JOSEPH TARDY'S *A Fowl Deal* a delightful bit of fantasy.

Among other features will be: W. F. McCULLOCH'S tribute to William K. Dyche, "*The Firstest Logger*" of the Northwest; an on-the-spot piece of reporting in which DENNIS STRONG tells how *Norway Plans by the Century*; ALBERT ARNST'S account of a relatively new method of logging *Timber Up the Hill*; *Hall of Conservation* by HENRY KERNAN; and the usual Shade Trees and Woodland Management features.

Because AFA's 77th annual meeting falls so late in October, most of the highlights will have to be reported in the December issue. We plan, however, to announce the winners of AFA's 1952 *Conservation Awards*, who will be revealed for the first time at the annual meeting banquet.

Among Our Authors—CLEVELAND VAN DRESSER, roving author whose home base is Florida, presents some enlightening facts about one of our latest "miracle" substances in *Chlorophyll . . . Green Magic* (page 6). OREGON'S *Planted Cottonwoods* (page 10) is a history of the West's first known reforestation project and a tribute to the men responsible for it. The author is ARTHUR PRIAULX, publicity director for the West Coast Lumbermen's Association. HENRY LESTINA of Sunland, California is author of *Own a Pet Bruin and Trouble's A-Brewin'* (page 14), an amusing bit of advice on what to expect if you add a bear to the family roster. What progress is being made toward Paul Bunyan's square-trunked dream tree is reported by ELMER W. SHAW, a Lacey, Washing-

ton, forester, in *Tailor-Made Trees* (page 16).

Experiment in Learning (page 20) is the story of Yale's Conservation Program, a unique approach to the broad problems of conservation. It is written by PAUL SHEPARD, JR., a member of the 1952 graduate class. *Ah, Wilderness* (page 18) is the narrative of MARTIN ESKAY, a slightly disillusioned but still enthusiastic Washington, D. C. nature lover. The Woodland Management feature this month is O. A. FITZGERALD'S *Christmas Tree Farming* (page 12). Fitzgerald is publicity director for the University of Idaho at Moscow. *In Less Than a Life Time* (page 23), the lead article in our special North Carolina section, is an account of two parallel paths of progress—Reuben B. Robertson's career as head of Champion Paper and Fibre Company Plant in Canton, North Carolina and the development of scientific forestry in the South. The piece is authored by RAY GARRETT of Champion's public relations department.

JOHN PARRIS relates the absorbing history of the decline and fall of a great Indian nation and how a martyr's life bought sanctuary for a few in their beloved Smokies in *Sacred Cherokee Soil* (page 26). The author, publicity director for the Cherokee Historical Association, is an authority on the once-powerful Cherokee tribes. *Classroom With Roots* (page 28) is the story of the acquisition and development of the Hofmann Forest, which serves as field laboratory of the North Carolina State College School of Forestry at Raleigh. The author is J. V. HOFMANN, manager, North Carolina Forestry Foundation, Inc., for whom the forest was named. ELLIOTT MERRICK and E. A. JOHNSON collaborated on *Mountain Water* (page 30), a report on water studies at the Coweeta watershed. Merrick is an editor with the USFS Southeast Experiment Station and Johnson is in charge at Coweeta. WADE LUCAS, director of public relations for the North Carolina Conservation and Development Commission, traces development of the North Carolina Forestry Association since its founding 42 years ago in *600 Voices in the Woods* (page 33).



STATE OF NORTH CAROLINA
GOVERNOR'S OFFICE
RALEIGH

W. KERR SCOTT
GOVERNOR

TO MEMBERS OF THE AMERICAN FORESTRY ASSOCIATION

It is my pleasure to welcome the members of the American Forestry Association who, along with the North Carolina Forestry Association, are holding their 1952 Convention in North Carolina.

Nature has blessed our State with an abundance of forests, and today - as always - they are considered one of our most valuable assets. As a source of raw materials they have contributed immeasurably to our economic growth, and they have long been regarded a scenic attraction that has played an important part in the development of our tourist industry.

The conservation and intelligent management of our forests is essential to the future growth and welfare of our nation, and this cause to which you have dedicated yourselves is worthy of the active interest and cooperation of every citizen.

It gives me great pleasure, on behalf of the citizens of North Carolina, to welcome you to our State; and it is my sincere hope that you will enjoy every minute of your stay with us.

Sincerely,

W. Kerr Scott

WASHINGTON LOOKOUT

By G. H. COLLINGWOOD

These months before the 83rd Congress convenes in January hold significance for all prospective legislation, not least of which is that relating to forestry and the conservation of renewable resources. In addition to a new President and many new members of Congress, there is the possibility a new political party may also be voted into power.

Arguments centering around the Presidential candidates and their respective platforms evidence the struggle as to whether the people wish to continue the Roosevelt-Truman policies of the past 20 years. An indication of one phase of this struggle is the appointment of a special task force to devise plans for putting into effect the recommendations of the President's Materials Policy Commission.

Twenty-five representatives of federal departments and agencies were called together by Chairman Jack Gorrie of the National Security Resources Board on July 22. They were given two months in which to prepare and submit to the President a plan to implement 70 specific recommendations that punctuated the five-volume report *Resources for Freedom*.

Sixteen of these recommendations are directed toward a program of forest conservation and development almost identical with the goals and plans long identified with the Forest Service. It is evident, therefore, that the Administration desires to create a situation wherein the conservation and development of forests and other resources will be given active consideration by the 83rd Congress.

Before most members of the 82nd Congress had left Washington, the National Wildlife Federation announced that failure to enact H.R. 565, known as the Tackett bill, was not to be interpreted as defeat. To prove this, the promise was made that a new and similar bill will be introduced in the 83rd Congress which convenes next January.

Moreover, the Federation added, the new bill will bear the name of a new Congressman. (Representative

Boyd Tackett, of Arkansas, had already announced that he is not up for re-election.) Next year's bill is expected to repeat the former bill in that ten percent of all national forest receipts will be set aside and used "for the development, maintenance, and operation of national forest recreational resources and areas, including wildlife resources."

Hearings conducted on April 8, and June 12, 1952, before the House Committee on Agriculture, under the chairmanship of North Carolina's Harold D. Cooley, were never completed and accordingly not printed. However, the bill was vigorously supported by wildlife conservation officers of several states, and a comparable number of Congressmen.

Supporting testimony was also submitted by representatives of the Izaak Walton League, the Wildlife Management Institute, and the American Planning and Civic Association. Carl D. Shoemaker, of the National Wildlife Federation, promises that hearings for the benefit of the 83rd Congress will have even more witnesses.

Only two citizen groups registered opposition to the Tackett bill. One was the National Wool Growers Association, and the other the Public Lands Committee of the Association of Oregon Counties.

National forests were reported as having nearly 4500 camp and picnic areas, capable of accommodating on any summer's day as many as 280,000 persons. Figures show that these tracts were used last year by nearly 30 million people. An even bigger tally may be marked up during 1952. As usual, it falls on the host to pick up the trash left by so many visitors and to provide many other services. Current expenditures for this hospitality amount to between \$700,000 and \$1,000,000, and leave much to be desired.

The Tackett bill was a response to repeated pleas by the Forest Service for larger appropriations with which to protect the forest resources while giving more satisfactory service to the public.

National forest receipts of \$56-

147,341 during the fiscal year ended June 30 give an idea of the possible returns from such legislation, and the Forest Service estimates the total may soon exceed \$70,000,000 a year. In terms of the bill, this would provide sums varying from five to seven million dollars a year.

All who appeared before the Committee supported the desire for more funds with which to meet the Forest Service responsibilities, but the spokesman for the National Wool Growers Association urged that the costs continue to be covered by direct appropriations. The Tackett bill was described as offering a blank check, use of which would deprive the Congress of its responsibility for making annual appropriations commensurate with the findings resulting from its annual review of the situation.

More significant from the viewpoint of the forest user, perhaps, was the expressed fear that even so large a sum might eventually become inadequate. In that case the possibility was voiced that costs of maintaining recreational facilities might prove a reason for raising the fees for grazing livestock on the national forests.

Fear was also expressed that recreation costs might lead to higher stumpage prices, but this ignored the legal requirement that national forest timber must ordinarily be sold on the basis of competitive bids.

A representative of the Association of Oregon Counties feared that receipts from timber sales on the heavily stocked stands of some of the western national forests might be siphoned across the country to serve recreational needs on forests closer to congested population centers. Said this spokesman: "The funds can be expected to flow toward the Congressional votes in the East and away from the western forests where votes are fewer."

This same representative suggested that so large an allotment for the development and operation of recreational facilities within the national forests might eventually be construed by the Service as a mandate from Congress to further reduce the numbers of livestock permitted on those areas. He visioned a possible reduction in the nation's food supply, and a serious threat to the tax base of some 400 rural counties in the West.

It follows, then, that legislation to improve the recreational facilities in the national forests may open up a number of seemingly unrelated problems, some of which have long been clamoring for attention.

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Healing agent, deodorant, digestion aid—this essence
of nature abounds wherever trees or other plants grow

CHLOROPHYLL . . GREEN M



This complicated looking apparatus is used in extracting chlorophyll from the plants

MAGIC



MAN has yet to learn the true worth of his greatest material treasure on this earth. If it were measured in dollars and cents, the value of all the metals and minerals ever discovered and yet to be discovered would be substantially less by comparison. This vast treasure has been with us since the dawn of history—it has been depleted but little over the passage of centuries—and it will be with us in relatively undiminished bounty as long as the skein of existence is woven on this planet.

This substance is the very essence of all plant life—it is present in every leaf on every tree—in every vine and shrub—in every blade of grass. Its name is blazoned on billboards the nation over—you read about it in the pages of newspapers and magazines—you hear about it on the radio.

Its name is chlorophyll.

Man has worked intensively with chlorophyll for over half a century. In recent years his probings have wrested some startling secrets concerning this mysterious substance.

In his relentless desire to learn how chlorophyll “works” he has discovered some amazing properties.

He has learned that it retards bacterial growth and is a healing agent in the human body. He has also learned that it neutralizes the odor of decay and that it actually performs that greatly over-advertised function, an “aid to digestion.” In addition, he has learned of several other priceless therapeutic properties.

Man has learned these things and is on the verge of learning a lot more. But the main object of his original search—how chlorophyll performs its natural functions in plants—still eludes him.

As matters stand now, it has been definitely established that the mysterious green substance in leaves and plants has certain properties and performs certain miraculous functions. But how chlorophyll accomplishes these chemical and mechanical changes is still a mystery.

It is typical of mankind that he

By CLEVELAND VAN DRESSER

can work with a substance and still not know exactly what it is. Man knows that chlorophyll does certain things—he knows how to extract it from plants; in fact, there are several hundred patents granted on various extraction processes alone—but precisely *what* chlorophyll is—nobody knows for sure.

Roughly, the known facts about chlorophyll are these:

It is a substance that takes water, nitrogen and carbon dioxide out of the air and transforms them into plant matter. In so doing, it creates a beet, or potato or any other plant product you can name. It performs this process mainly when the sun shines—almost never in darkness. The process is called “photosynthesis,” and while it goes on, the air is purified by release of oxygen.

A somewhat similar process goes on in the body of animals. It takes plant products, the beet and the potato, and transforms them into muscle, fat, sinew and bone. The process is called “metabolism,” is done in part by the hemoglobin in the blood, and it goes on practically all the

time, creating carbon dioxide in the process. It is interesting to point out that the two processes are dependent upon each other.

Plants need carbon dioxide for the photosynthesis process carried on by chlorophyll. Animals (including man) provide it with the process of metabolism. Animals require oxygen for the process of metabolism. Plants supply it through the process of photosynthesis. It's a neat trick and it works. If it didn't, every living thing would perish.

The healing properties of chlorophyll are considered the most valuable of all its uses. Due to the fact that it contributes to the creation and growth of cell tissue, plus its quality of retarding bacterial growth, its medicinal uses are manifold.

It is an invaluable aid in post operative work in surgery—it is used to hasten the healing of lingering and malodorous lesions and running sores. It speeds up the normal process of the human body in closing simple cuts and abrasions. In addition, as stated before, it aids digestion in the human body and carries certain beneficial and necessary vitamins.

These pharmaceutical and medicinal properties are not mere theories and laboratory experiments. Recently the conservative American Medical Association recognized the therapeutic values of chlorophyll by publishing actual case histories of patients treated in hospitals for various wounds. The Association journal goes so far as to state: "the experiments supplied positive evidence in favor of the claim" (that chlorophyll promotes healing), and in another section of the publication flatly states: "37 percent of the patients showed accelerated healing."

Getting down to specific uses for the public in general, for once

grandiose claims for dentifrices, mouth washes and deodorants have some foundation in fact. Chlorophyll in sufficient quantities *does* combat unpleasant odors. That characteristic of chlorophyll has been a tremendous boon to the pharmaceutical industry. Not only have initial sales of chlorophyll-infused articles been heavy but repeat sales as well.

How it combats odor is explained in highly technical language on the part of scientists and doctors which appears to be a smoke screen for lack of positive knowledge of how the job is done.

Certain facts are known, however. The property of removing carbon dioxide from the air and replacing it with oxygen is one contributing factor. As a matter of fact, the deodorizing ability of chlorophyll was learned partly by accident. In experimenting with slow healing lesions it was learned that the application of chlorophyll not only speeded up the healing process, it cut down, and in some cases completely eliminated, accompanying odors.

How chlorophyll neutralizes unpleasant odors is still somewhat of a mystery. From the maze of medicinal and scientific terms which greeted my request for an explanation of this most welcome process, I extracted this understandable piece of information: Chlorophyll acts as a catalytic agent—it speeds up oxidation and the transformation, in the human system, of solid substances back into carbon dioxide and nitrogen. Another explanation is that chlorophyll aids the hemoglobin in the blood to "burn away" odors.

Practically all of the chlorophyll used commercially in the United States is produced by one factory—the American Chlorophyll, Inc., located in Lake Worth, a small city

just south of West Palm Beach, Florida. Founder of the company is Robert Hays Van Sant, a research engineer, who has probably done more for the practical development of chlorophyll than any other one man in America. He was the first president of the company and it is through his cooperation that most of the information for this article was obtained.

Chlorophyll is not new. It dates back to the Revolutionary War, for it was in 1772 that Sir Joseph Priestly of Philadelphia awakened interest in the process of photosynthesis in his published manuscript, "The Basic Process on Life's Production Line."

In modern times, Richard Willstätter, a German scientist, spent his lifetime in the study and development of chlorophyll. He received the Nobel Prize in 1915 for his long years of work. Based greatly on Willstätter's previous work, the U.S. Department of Agriculture set up a research project on chlorophyll in 1914.

That work was carried on until 1933, when American Chlorophyll, Inc. was founded by Van Sant. The new company took up the development of chlorophyll where the Department of Agriculture left off. The following year, Dr. Frank M. Schertz, who had headed the federal project, was installed as scientific director of American Chlorophyll, Inc. which was located in Georgetown, part of Washington, D. C.

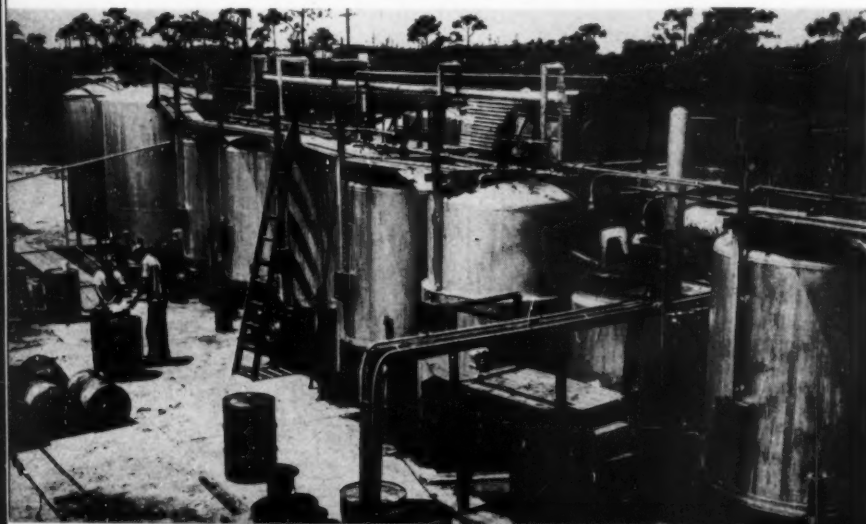
In 1935 the company moved across the Potomac River to Alexandria, Virginia, and in 1948 it moved to Lake Worth, Florida, where raw material—vegetation—was abundant the year round. On May first, 1952, American Chlorophyll, Inc. merged with Strong, Cobb and Company, one of America's oldest drug houses (founded in 1832).

As of this writing, chlorophyll is used in some 55 different products. No two formulas are the same. The precious substance is extracted from the leaves and stems of various plants—alfalfa being one of the most productive.

To say that American Chlorophyll, Inc. is inundated with requests for its product is an understatement. It appears that every toothpaste and mouth wash producer in the land wants chlorophyll in his product. The stuff isn't handed out indiscriminately by any means. A formula for each individual product is prepared. What goes into mouth

(Turn to page 36)

Chlorophyll is extracted by a crushing process. It is then mixed with water, oil, alcohol or other solvents



YOUR SHADE TREES



Pruning Principles

As one travels about the country he is frequently appalled by the utter ignorance and carelessness evidenced by the thousands of mutilated trees which he observes.

No part of our land seems to be entirely immune to the well intentioned but misdirected ministrations of the loppers' saw or ax.

Many people decry—and rightfully so—the wasted time and money expended on the extensive and frequently unnecessary cavity work which was performed by the poorly trained predecessor of the modern arborist, but even more insidious, because of its relatively greater and still widespread acceptance, is the work of the ignoramus who thinks he has to behead every tree in which he has the opportunity to sink the teeth of his saw.

Almost anyone enjoys taking a pair of pruning shears or a saw and doing a little pruning on the shrubs or trees around his home. Pruning properly done will benefit most plants, but misdirected efforts can easily do serious harm. Before we attempt to prune our own trees, or allow others to do so, it is well that we give a little consideration to some of the more important principles which govern the pruning of shade trees. We should know when pruning is desirable and why it is sometimes harmful. We should also be familiar with some of the important phases of pruning technique.

A sensible pruning program starts in the nursery when the trees are small. At this time it is easy to rub off buds or prune twigs which, if allowed to develop, would make poorly spaced undesirable branches; to eliminate V-crotches which would be likely to split in the future; and so train the remaining parts of the tree

that a strong structural framework is developed.

Few of us, however, have the opportunity to guide the development of a young tree until it reaches any great degree of size and we are forced by circumstances to do what we can for mature trees as we find them—usually full of dead wood; frequently split and broken by storm; improperly developed as to structure; and too often, badly injured by disease or insect attack.

The desirability of shade tree pruning may be classified under three more or less interlocking headings: *health, appearance and safety.*

Pruning to improve the health of a tree quite properly might include the removal of dead and diseased branches to prevent the penetration of wood-rotting fungi into other parts of the tree; thinning to permit a more free circulation of light and air or to compensate for root losses; properly performed pollarding to perpetuate an old tree; removal of intersecting branches to prevent future decay problems; and removal of old branch stubs to promote healing and prevent decay.

As a health measure, pruning is preventive rather than corrective since proper pruning aids wound healing; prevents splitting by removing undesirable limbs and weak crotches when they are small; keeps the root system and crown in balance; prevents the spread of decay by removing the source; and removes or trains rubbing limbs before they cause injury.

Pruning to improve appearance often is a desirable treatment for specimen trees or formal groups. It should be remembered that every

species has at least one characteristic habit of growth, and no attempt should be made to change this form unless unquestionably necessary.

Unruly branches may need to be curbed to keep them within bounds; vistas may need to be cleared to open up a desirable view; and in some cases, formalized pruning to a definite shape may be required for esthetic purposes. Some species respond better than others to such treatment and the person responsible should be familiar with his subject before attempting to change the natural form of shade trees.

The danger created by dead limbs and low branches over sidewalks, roads, and areas where people congregate is so apparent that justification for pruning to increase safety seems unnecessary.

(Turn to page 42)

Topping, properly done, enhances rustic beauty of hackberry tree



Oregon's Planted Cottonwoods

Towering-tall, these are living monuments to the dream of a man who pioneered the first known reforestation project in the West

By ARTHUR W. PRIAULX



Grant Criteser, 77, operated West's first forest tree nursery in 1907

ON the rich floodlands where rivers like the Calapooya, Pudding, Yamhill and Tualatin enter the mother Willamette and on many an island up the 149 meandering miles of Oregon's historic waterway from Oregon City to Harrisburg are towering-tall, living monuments of the earliest known reforestation work undertaken by man in the western United States.

Here verdant plantations of northern black cottonwoods today attest to man's faith in the forests, to man's

inherent instinct to perpetuate the forests.

The year was 1893 and executives of the Willamette Pulp and Paper Company at West Linn, Oregon were concerned about their source of raw material. They had been operating only five years from 1888, yet the supply of northern black cottonwood along the Willamette lowlands was nearing exhaustion.

Sparked by J. W. Walker, timber superintendent, the company decided on a bold and daring step. They decided they would grow their own wood. That they were a half century ahead of their time bothered them not one bit.

Walker became an evangel of forest planting. Like fabled Johnny Appleseed, the visionary logger carried cottonwood slips in his pocket and stuck them along the river banks wherever he thought they would grow. Living proof of his faith is a grove of cottonwood giants along the river a mile or so above the West Linn mill, now grown to be one of the world's largest.

In the late fall of 1893, Walker sent a crew of five young men from Oregon City on the sleek sternwheeler *City of Salem*, their destination a small island in the Willamette below Harrisburg.

That flood-ravaged bit of land, without a name, became the home of these boys for two months that fall as they cleared land of stumps, pulled small cottonwood sprouts from gravel bars and planted the seedlings in the carefully prepared soil. That 60-acre, river-washed is-

land became as well the site of man's first conscious efforts to replenish the forest wealth of the Pacific coast.

One of those boys is still alive, energetic, modest, 76-year-old Henry Jones, who lives at Canemah on the banks of mother Willamette.

In the space of 20 years after 1893, the company planted more than 1000 acres of rich river bottom land, all of it on islands and at river mouths where agriculture was too risky due to flooding, but where conditions were ideal for cottonwood culture.

In 1894 a second planting crew was landed on an island in the Willamette below Corvallis and cottonwood slips and seedlings pulled from gravel bars were set in rows eight and ten feet apart. By 1895 more planting crews were being sent out each fall by Walker on what was then becoming an annual venture. Five islands near Jefferson were planted. In 1896 and 1897, a 90-acre plantation was put in on the upper end of Grand (Big) Island near Wheatland.

During the same years a 200-acre planting was made at the mouth of Pudding River near Barlow and another of the same size on a tract at nearby Ottawa. In 1898 plantings were set out on the old Dodge place below Harrisburg and on Hite Island as the tempo of planting picked up. The last two plantations as well as some of the earliest island plantations were not too successful due to flooding out of young trees.

Cottonwood planting became an obsession with Walker. A peach or-



"I planted this one in 1907,"
Emory Noble boasts to an even
older forester, Henry Jones

chard on the old Peter Wise place was blasted out and the land put in cottonwood. Powder blew out another peach orchard on the Flanagan farm and peach land became cottonwood land.

No less than three separate plantings were made in and around the mouth of Pudding River flood lands and by 1907 the great conservation fever was in full swing all along the river. One of the foremen about that time was Emory J. Noble, now an attorney at Oregon City, who still smiles at some of those early-day reforestation experiments.

Johnny Walker was as progressive as he was energetic and he soon decided cutting slips in the field and pulling seedlings along the river gravel bars was too slow. He'd grow the seedlings. On Rock Island, three miles above Oregon City, he had a three-acre nursery site cleared. Here, for three years, Grant Criteser, still alive at 86, operated a cottonwood

nursery, raising slips into rooted seedlings for use by planting crews upriver. This was the first forest tree nursery established in the west and some of its 1907 progeny have become forest giants long since.

All this was the start of reforestation in the region. It was the start of 58 years of continuous care, management and planting of forests by one company (the Willamette Pulp and Paper Company, after a series of consolidations, today is the Crown Zellerbach Corporation).

Cost of clearing the land on some of the projects ran as high as \$105 an acre and finally, about 1910, President N. R. Lang called in J. W. Walker for an accounting. When Lang learned that the company had spent some \$80,000 in reforestation during nearly 20 years he called a halt. This was a sizable sum in those days and too much money to be spent on an untried experiment, Lang concluded.

There was to be a "rest" period of only a few years until Crown Zellerbach resumed active and aggressive reforestation efforts ranging now along 500 miles of Pacific Coast forest lands from far north Neah Bay on the tip of the Olympic peninsula south to Tahkenitch near Coos Bay.

Early day Henry Jones, Johnny Walker, Emory Noble and Grant Criteser never dreamed they were helping with the birth of a vast conservation movement which was to grow until a single company, Crown Zellerbach, would count 34,934 acres of its lands reforested by man in the space of time from 1893 until today.

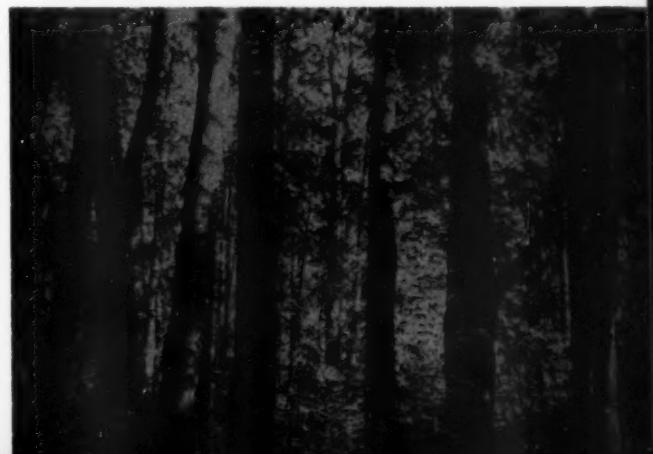
Nor that private industry in the Douglasfir region would plant in a single decade from 1941 to 1950 more than 46,000,000 nursery-raised seedling trees. They could not have dreamed that additional tens of thousands of acres of non-stocked forest lands would be seeded from

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Scene in 1893 on a little island near Harrisburg, Oregon, where West's first reforestation was started



Same site in 1952. Picture was taken from the interior of a thriving plantation of northern black cottonwood





... In the Northeast

Christmas Tree Farming

By O. A. FITZGERALD



Christmas tree schools offer the farmer tips on how to help nature improve her batting average in producing shapely trees

FROM New England to Puget Sound, Christmas tree farmers in the northern bank of states are helping Nature improve her batting average in producing shapely holiday trees. And it's paying, too, in stability to what already has become a \$20,000,000- to \$50,000,000-a-year farm operation.

"Just a little attention at the right time usually will make a good tree

out of one that, left alone, would be another reject," declared a University of Idaho extension forester at a Christmas tree farming school last spring.

What he said sets up the "why" of one of the newest developments in farm forestry. What he calls "a little attention" is likely to involve underpruning, top pruning, bark scarring, thinning, removing competi-

tion from brush and stump culture.

That kind of Christmas tree farming means less hiking and more cutting per acre at harvest time. Some tree farmers with native woodlands who let Nature go it alone often hike several miles to find a few trees that will sell. Yet during that hike they will have passed dozens that are lopsided, leggy, or of too light density—all defects that could have been cor-

Slight barking below where tree is to be cut often slows top growth, improves the density



Within a year this fast growing bush could spoil otherwise perfect Yule tree—so out it comes



rected by that "little attention at the right time."

That Christmas trees respond to attention is borne out in harvests of farmers who practice Christmas tree farming. On well-stocked stands—native or planted—they are getting 25 to 50 or even more salable trees from every acre every year.

Most of the 28,000,000 trees carrying lights and tinsel every holiday season are cut from areas where the trees have grown naturally. Except for North Dakota, all of the northern states bordering Canada are big-time producers. This northern row of states cuts approximately 21,500,000 trees yearly.

Montana, for instance, ships about 3,000,000 trees to more than 30 states, ringing up more than a million dollars added income to its Christmas tree farmers. Eight out of every ten trees come from privately owned woodlands, indicating the almost unlimited opportunities in Christmas tree farming.

Coming up fast is the acreage planted expressly for the Christmas tree market. From Arthur M. Sowder, an extension forester with the U. S. Department of Agriculture who has worked out some basic rules in this new kind of farming, comes the estimate that about 100,000 acres are now devoted to that purpose. Farmers have planted most of it. Eastern states account for the bulk of this acreage, Pennsylvania having about 40,000 acres.

Here are some proof-of-the-pudding stories from Sowder indicating how Christmas tree plantations respond to management:

From four acres, on which he planted 12,000 trees in 1927, an Ohio

farmer harvested more than 2000 trees, averaging 60 cents apiece, and still received \$1200 for the standing timber. From 15 acres, a New York farmer harvested 600 trees an acre for 15 years. Planting, pruning and harvesting cost him \$2700, leaving him a net take of \$4300.

In Ottawa County, Michigan, the county agricultural agent encouraged farmers to plant trees to keep their sandy soil in place—a good idea anywhere.

Within four to eight years some of those trees were at Christmas tree size. Tree sales soon added up to big money.

One of the newest wrinkles in Christmas tree farming is stump culture—growing a second tree on the stump of one just harvested. Stump culture works best with Douglasfir, the most popular of all trees at Christmas time.

"Turn-up" trees is the trade name for those grown on stumps. When trees are cut at ground level, as many are, only one tree can come from each stem. Stump culture involves cutting a tree above the bottom whorl of branches, breaking back all of those branches but one. That survivor will turn up and develop into a tree.

During the dormant period, October to April in the main Christmas tree states, is when most tree farmers help Nature. Much of the work is tied in with tree harvesting in November or early December. Once a farmer gets the knack of sizing up a tree needing a little help he can swing his hatchet or pruning knife pretty fast—underpruning, barking or scarring at the rate of 25 to 50 trees an hour.

Another year or two and this "turn-up" tree, only a limb three years ago, will be ready for holiday lights and tinsel



Here's the style to shoot for. Slowing its growth rate several years ago gave tree density that brings premium prices

Here are some of Sowder's suggestions on how to help Nature grow a salable tree on every stump:

- 1.) Keep terminal growth to about a foot a year;
- 2.) Keep the lower and the lateral branches pruned so that the tree will grow to a conical and uniform shape;
- 3.) Begin pruning just as soon as the leader (new top growth each year) has developed a length out of proportion to the top laterals;
- 4.) For pines, pruning must be done in early summer—for short-needed evergreens, such as spruces and firs, pruning may be done any time;
- 5.) Pruning usually should be done a year or two before the tree is likely to be harvested;
- 6.) In removing competition, leave open space on all sides about equal to the height of the tree.

To perpetuate a Christmas tree stand, leave scattered big trees as seeders. Trees generally shed their seed for two to three times their height.

"Many young forest stands are so thick that thinnings are necessary to assure satisfactory growth of timber," declares Extension Forester Sowder. "Thinnings release the final crop of trees so they can make their best growth. Actually, a properly supervised harvest of Christmas trees proves beneficial to the remaining stand."

New trees from stump culture. Topping, then breaking back all branches but one, develops a "turn-up" tree



own a pet bruin and



Toby demanded, and got the bear in his master's cupboard. And it was this cultivated appetite that saved the Park Service employee and his friends when Toby reverted to type

YOU don't have to be a National Park Service employee to own a pet bear, but it helps. For economical instance, you are entitled to buy your sugar-cured smoked meats through the government warehouse at a neat discount of 40 percent on the dollar. And a pet bear just has to have his daily rasher of bacon, otherwise he may not be your pet bear for long.

This Toby Bear of ours was brought to the warehouse at the soft, fluffy age when you could pick him up like a doll and love 'im to death. His little baby grunts were as touching as those of your own child. He came to us after his mother and a hopped-up motorist collided head-on around a sharp curve, and both were killed.

And by the time the little fellow realized his plight and crawled out of the brush to be picked up by a patrolling ranger, he was just about as hungry as a little bear could get. We took him in against three unwritten rules of the Park Service and gave him the best in Uncle Sam's cupboard.

And as the early spring season gave way to summer months and late autumn set in, the warehouse crew began to worry about a slumbering place for sleepy Toby—a suitable boudoir for his long hibernation. By now he was all bear in every sense of the word, sticking his nose into everything that might contain food and add a little more lard to his two-hundred pounds. To this slightly excessive weight of Toby, we owed thanks to the Ranger's Club kitchen and the Labor's Mess. These food emporiums served meals three times per day and Toby never missed the gong.

It took a short conference and a long poker game to decide where Toby should sleep away his fat. The spot finally decided upon was the neighborhood kids' dugout right back of the machine shop and under the roots of a huge cedar tree.

I think we spent all day Sunday poking around those roots and fixing up the den. We even went modern,

! trouble's a-brewin'

By HENRY LESTINA

installing sewer pipe for drainage so Toby would sleep dry just in case of a winter thaw. And of course, we couldn't have Toby sleeping on the cold, bare ground, so two of us pulled in a mis-appropriated bale of barley hay and spread it out thick.

"Yep!" we agreed at sundown. "Good enough for man or beast."

But Toby didn't lie down and grunt agreement. We took him over there and crawled in with him, pretending sleep. But he only stayed as long as we did. And having domestic obligations such as feeding the family, we couldn't afford to hibernate with Toby even though the idea appealed to some of the boys.

Hence Toby came out with us and hung around the warehouse listlessly until one balmy afternoon. To us, this was a nice day for work outside. But to Toby's animal instinct, it spelled out something different—a coming snow storm and winter. So being born a free soul in a democracy, he rolled off his fat, rear end and waddled out the back door.

And that was the last we saw of Toby until the following spring. Where he hibernated we didn't know. But wherever it was, we knew it didn't measure up to the snug and comfortable salon de bear we had prepared for him. And to which the kids swarmed back, chuckfull of wisecracks.

Now with Toby back from doing nothing but wasting away all winter, we had it to do all over again—fill him out to normal size. And that's the one trouble with having a pet bear. You send 'im off into hibernation nice and fat and he comes back to you with little more than hide and hair and miles of gyrating intestines.

Being over his initial lethargy of awakening, Toby was ravenously hungry, swallowing everything without even chewing it for taste. It took about six weeks to round him out part way only. And now with that gnawing pain on the inside eased up a bit, he was smiling back again. Doing some of the hard tricks we had taught him.

But life was beginning to take on a mature aspect for Toby. He was no longer the cute, little cub you picked up and cuddled and romped with on the haymow. Seriousness was beginning to wrinkle his nose and his playfulness was limited to the tricks and games he enjoyed. He still hung around the warehouse like a poor husband hangs around home; and for the most part, remained loyal to the crew that brought him up as a bottle baby.

But there were other pressing interests in the valley that demanded his attention. After all, he was a growing "he bear." And there were some pretty nice "bear chicks" down near the river. And other interests such as roadside tourists taking pictures in exchange for candy and "yum yum" cracker jack. It was a variety in tidbits and companionship.

But seldom did he skip the warehouse and his buddies for more than a day, no matter how pressing the business on the outside. Usually he would amble in right after having lunch at the Ranger's Club and move around like a lazy warehouse foreman. Or just sit on his rear end for hours, watching "the fools work."

Thus life slipped by for our Toby Bear, rounding out his second year on Uncle Sam's beautiful, wooded acres. And like Mother Nature's well regulated animal, he squeezed through the back door one afternoon as snow flakes began to fly, and that was the last we saw of Toby until the following spring.

And as we had done before upon the return of Toby, we snuffed out the lamp in the window and proceeded to make a big fuss over the gaunt carcass. Began filling him up as fast as he would take it in. And for the most part, there was little change in Toby's daily habits. Just a routine season, as with the average tourist. Now being an older specimen of his hungry species by one winter, Toby was a bit more proficient in frowning, scowling, smiling; and an inveterate snooper.

That's the one inborn characteristic of a bear—snooping around. They just like to stick that pig-nose of theirs into everything that might hold victuals. And on this lazy afternoon after Toby got tired of playing around, he started on his rounds of super-snooping and wound up with a ten-gallon milk can wedged over his head. There were always a stack of empty milk cans on the rear warehouse platform, and now Toby was scrambling 'em like a hurricane.

"Cripes!" We all thought it was another rock slide, and quit the building fast. The utility area was in the rock slide area, just below a high escarpment; and whenever we heard a rumbling, we ran first and looked around to see afterwards. We turned the corner of the warehouse on two fast legs apiece, and lo and behold—ran smack into the cause of the disturbance. There was Toby, hoodwinked with a milk can and charging around in the pile like a blind-folded swordsman.

Of course it was impossible to approach this problem on two good legs and walk out of it the same way. Our Toby could neither see, smell, nor hear; and he didn't seem to give a darn for anything or anybody. He flayed that can around in a jumping circle that made it dangerous to even watch from a distance of 20 feet.

So we pooled our ideas and decided to play cowboys. Brought out several pieces of rope and began throwing loops for Toby to step into. Then after the final, fourth leg was caught, we threw him flat on his back and made fast the ropes to a couple of nearby trees and the warehouse porch studdings. Then with a rope looped over the can, we started to pull.

But the six of us tugging with just about all we had couldn't budge it. It seemed that the hide and fat around Toby's neck would roll up and wad right back of his ears and inside the neck of the can. It was the same, rubbery reaction every time we gave a pull. We just didn't

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Square trees, perfectly sound, with neither limbs nor taper? Not yet, but foresters now are using artificial pruning to produce trees without knots in the butt logs

Tailor-Made TREES

By ELMER W. SHAW

SINCE the days of Paul Bunyan, loggers have dreamed of custom-built trees made to measure. The tree of their dreams must be square, perfectly sound, without taper, and without limbs, except perhaps in the very top. Other specifications are usually added as the story grows.

But such dream trees just don't exist in nature — not even in California. And yet tailor-made trees are not altogether a dream either, for modern foresters are finding many ways to control or influence tree characteristics. One of the controls they use is artificial pruning. Thus by removing the lower limbs at an early age they are able to produce trees without knots in the butt logs except in a small, central core.

In the Pacific Northwest more than one million young trees have

already been pruned, but this is only a fraction of the number that will be needed when the old-growth timber is gone. On a nation-wide basis it is estimated that during the 1951 fiscal year approximately 82,000 acres of National Forest land were artificially pruned.

Really it was Mother Nature, not the foresters, who originated the idea of pruning. In fact, she had pruned many a fine tree long before man invented the pruning saw. But these high quality, virgin stands that pruned themselves naturally are almost a thing of the past. Moreover, it took from 300 to 500 years, often longer, to grow these highly prized, giant veterans. Nowadays, foresters are thinking in terms of much shorter rotations—50 to 150 years in many cases.

The lower limbs on vigorous,



Photos by the author
Hard-boiled hats are necessary for protection when pruning higher than 12 ft.

If not pruned, a century would pass before this tree started growing clear wood





Forester uses climbing spurs, Hebo club in pruning young Douglasfir plantation

After pruning, this tree will be growing clear wood on butt log surface in 6 years



young trees are slow to die and heal over, especially when there is little competition from neighboring trees. Consequently, the logs from second-growth stands that come in after the virgin timber has been cut are usually full of knots.

Boards with small, tight knots are all right for some types of paneling and general construction, but clear, unblemished wood is needed for plywood face veneer and for clear lumber. That's where the inducement for pruning comes in.

Forest pruning had its first widespread impetus in this country during the C.C.C. days of the 1930's. Most of this work was done with curved saws mounted on handles or poles six to 14 feet long, hence the name pole saws.

Some trees were pruned as high as 35 feet by using special climbing spurs. In Douglasfir stands the trees were often pruned by knocking off the dead limbs with a Hebo club. The Hebo club looks as brutal as a caveman's weapon, but it is considerably faster than pruning with conventional pole saws.

Thus far, most of the pruning has been done in stands of Southern pine and Ponderosa pine on the National Forests. However, a few private companies are now beginning to realize its advantages and are giving it a trial. Farmers, too, are learning that pruning a few well-selected trees in their wood lots during the slack seasons is a good investment of their labor.

Pruning, like nearly everything else nowadays, is becoming mechanized. Power pruning has already become well established in many of the big fruit orchards. Even in the woods, portable power units with chain saws and other attachments are beginning to take the place of old-fashioned elbow grease.

Even chemists are tackling the pruning problem. They are trying to concoct a miracle spray that will cause the lower limbs to die and drop to the ground without injury to the tree itself. We hope they are successful, but so far it is still in the test tube stage.

The old expression, "There is more than one way to skin a cat," is also true of pruning trees. Perhaps the most unique method is one that was developed in Russia by P. G. Krotkevich. It is called Russian pruning or bud pruning, for the limbs are literally "nipped in the bud." That is, the lateral buds are pinched off each year before they get a chance to grow into limbs.

A few whorls of branches near the ground are allowed to remain to carry on the photosynthesis necessary for the tree's growth. This produces a freakish looking specimen, for the tree has no crown as long as the pruning is continued. Although bud pruning may offer some distinct advantages, small-scale experiments in the United States indicate that it also has its inherent weaknesses and is probably impractical under our present systems of forest management.

The most important phase of forest pruning is proper tree selection. To the man who does the marking, every tree becomes a living question mark. Every tree pruned is an investment in the future—a gamble that it will survive and make good growth. Figuring the odds calls for sound judgment, broad experience, and special training.

Another and more important question is: "Does pruning pay?" In the retail lumber market, clear wood sells for two to five times as much as the knotty, common grades. Even in sawlogs or stumpage, an attractive premium is paid for peeler logs and high quality timber. It is upon this price difference that the profits from pruning are anticipated. Ordinarily, the crucial factor in determining the profit from pruning is the rate of growth, for it is primarily growth rate that governs the amount of clear wood produced on the pruned section. Initial costs, interest charges (if any), mortality losses, and the number of years before harvest also have an influence on the net returns.

Fifty to 100 years may be required to realize the greatest benefits. But even so, judicious pruning can be highly profitable. Gains ranging from \$500 to \$2000 an acre are possible under optimum conditions.

On the other hand, losses can occur when the factors are not properly understood, or when such unexpected disasters as fire, storms, insects, or disease take a heavy toll. But the same is true of forestry itself, or of farming, or any other investment in which an element of risk is involved. Pruning, like so many other phases of good forestry, is predicated upon realistic foresight plus a faith in the future!

Pruning is not the only type of tailoring being used to bring the run-of-the-mill tree closer to our heart's desire. A "new look" or a new outlook rather, is gradually transforming the lumber industry. The truly progressive companies no

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After months of dreaming you and your pal head for the simple life. Your destination is the primitive hinterlands where one communes only with nature—unless, of course, unless

Ah, Wilderness

By MARTIN ESKAY

SHASTA Sam says a wilderness is a spot scarcely trod by white man. It must be at least two miles from the nearest empty beer can.

Some of the members of the Wilderness Society—a group of men and women who work overtime to find and use places untouched by human hand—say that the wilderness should give people a chance to rely on their own resources.

From these two hints you can gather that there are humans who go to great lengths to reach a place which has primitive atmosphere.

You have been dreaming for months of return to the simple life. You will not be traveling with a large group, you've had kids around you all year and are willing, nay anxious, to sacrifice comradeship of the trail for a little peace and quiet.

You cautiously select a companion and hold forth on the joys of being self-sufficient. Pitting yourself against nature—and winning, of course. You are going to meet unmodified natural processes, headon, you think.

You spend days planning your equipment. You measure out your food to the last ounce so that you can get it in your 40-pound pack. A pack-wise friend has told you not to load up to 50. You dream of dehydrated foods, dried fruits, K-ration type biscuits containing fortified sugars and starches.

The collection of hard dry edibles looks most unappetizing when you get it together, in fact it looks

as if you couldn't crack your meal with a hammer. You tell yourself that you can enjoy poor meals with good grace when you are richer spiritually from your contact with the wilderness.

But guess what! You are dumped off a truck from a dude ranch which takes you to the edge of the wilderness. You walk with you companion for several hours, single file of course, looking up at the tall trees, brushing aside the mammoth ferns and inhaling deeply of the mountain air. This is a dream come true!

Then you drop down beside a stream. You are still cautious about drinking. You follow the brook upstream a few hundred yards to see from what clear spring it bubbles forth. You find that a pack train of horses passed that way not less than two hours ago, leaving as clues some mighty fine clear footprints as well as other visible signs of passage.

But you weren't really thirsty so you go along toward the next pack-shifting point. When you find a clear stream you decide to make camp. Before you even unroll your pack you whip out your fishing rod. You have a fine time resting on the bank for three hours. The fish are resting, too.

The first camp making is a project to end all projects. You plan to build a fire, unroll your sleeping bag, prepare your evening meal from a sitting position, and tumble over on your bed as your eyes droop—conscious of a day well spent. That was the idea.

But, you scrape clear a yard diameter place to set your flaming coals, disturbing hordes of insects, long-term residents of the forest duff. They walk over you on the way out and a few of them decide to hole up against the evening chill in your sleeping bag. You approach a fallen log and begin to tear it apart. It is soggy with fungus and stringy with lichens.

This won't do for fuel so you start thrashing around in the underbrush. There ought to be plenty of sizable fuel around. The winds have been hurling branches to the ground for decades. This is the wilderness—untamed. You drag forth a large, reassuring supply of limbs and branches without bothering to use a hatchet, but the stuff is wet.

It will dry in time and lend itself to being the center of a respectable fire, but you have to dry it first.

And what do you use to dry it? More wood. You dig into the litter on the ground until you find small stuff, under the layer of damp leaves. This will ignite and burn merrily. You have to mine quite a lot of the stuff before you have a drying fire that functions. After you get it to burn it occurs to you that you might have fallen and split open a small, dead standing tree and used the dry center.

Once the blaze has subsided to a bed of coals you are ready to cook. You remember the ham and egg, fish-fry, sizzled steak and French fries that you have enjoyed in other less primitive and natural environments.



The woods folk are more than happy to share your sleeping bag with you

You pitch a handful of desiccated protein foodstuffs, a pinch of grain-shaped starches into a pot of water and wait for them to expand. And that's your supper.

Instead of sinking into a dreamless sleep, you find that you can't sleep at all. You realize that you are sharing your sleeping bag with woods folk.

The fine feathered friends whoop, hoot and yammer at the top of their lungs, the small fry chirp, cheep and rasp; and the trees bend toward each other and rub dead branches together. Noisiest place you ever didn't sleep! Light, too. The stars are twice as big as they ever were before. No shades to keep the moon out of your eyes. You move, and the moon fol-

lows you.

About 3:30 you fall asleep. You are awakened at five by a rising sun that throws a flare in your face. Breakfast is gruesome, but the wilderness urge is still with you.

There are delights. You catch a fish. You eat it. You are walking around now, in your nation's last frontier. Increasing consciousness of rocks, rills, woods and templed hills has made you appreciate more fully your country. You are on the lookout for wildlings—a bear lumbering off, a deer leaping through the aspen; a five-pointed monarch of the forest. You see one squirrel.

You begin to climb. Breathing is difficult. Eight months indoors has not prepared you for this. You climb

straight up the face of the mountain grasping at small trees and underbrush. For the first time you are having the experience of pitting your feeble strength against nature as it is. You feel that no white man has passed this way before. At last you are conquering your first natural obstacle, you are within reaching distance of the top. You drop down to savor what is to come—that well earned triumph. Passing between you and the summit come 22 pack mules sauntering down a well defined path.

A sudden curtain of rain blots out the sad sight. You mount to the peak but on top of the mountain there is little forest cover. The rain bounces off rocks, carves channels in the soft dirt, and sashes you to the knees with muck. When you lift a foot you seem to have extra packs attached. You can't make camp on the mountain top in the rain so you drop down to the shelter of the first trees.

Safe in the woods you undertake food and shelter, through a casing of mud. You pick up a sharp rock and start scraping your garments and gear. It's too sharp and you cut a slit in your sleeping bag which you don't find, but the rain does. Last night's campfire was a picnic compared to this one. Finally you munch your dehydrated goodies unwatered, because there seems to be too darn much water on the loose as it is.

By morning the stiffness is soaked out of you. You are really old hands by this time, you and that disgruntled meal-bag with you. You slog along with a song on your lips. The deeper you penetrate into God's greenery the more carefree and buoyant of spirit you are. The play of shadow and sunlight on majestic columns, the response of leaf, twig, branch or trunk to the movements of the air; the myriads of plant, insect, bird and animal life—the placid flow of waters, all combine to stimulate and soothe the senses.

At this high point of your trip, before entertaining thought of return, you drop down beside the sapphire waters of a mountain lake. To worship. With a roar of a million eagles five seaplanes set down and taxi toward you. A woman in high heeled sandals and a flame colored silk dress teeters down the landing steps.

"What's the name of this lake, boys?"

Oh well, even Omar had a woman in his wilderness.

We give up!

**All eyes are on Yale's
new-type graduate con-
servationists—trained
to grasp and interpret
our varied resource aims**

By PAUL SHEPARD, JR.

THE students at the Yale Conservation Program are probably one of the world's strangest college classes. What they do will influence the whole future of college conservation teaching, and has already set many deans to thinking. A half dozen universities have reported starting conservation departments after Yale's lead, but many more are waiting to see what becomes of the graduates and whether the world is ready to hire and listen to college-trained conservationists.

Yale set up the Program in the fall of 1950 with the backing of the Conservation Foundation of New York. The objective was not to train specialty technicians, unable to think clearly outside forests, soils, or wildlife, but to broaden the understanding of some who had already achieved skill in their field. It was a unique approach not only because of the generalizing of graduate students but because scientists and non-scientists would be mixed explosively under one roof.

The country's youth who are thinking of careers in conservation will be watching these Yale guinea-pigs too, as the latter sift out into agriculture, industry, business, gov-

ernment, or education. One man who is confident in a bright future for those who can trace the interdependence of all kinds of resources—including human—is Professor Paul B. Sears, chairman of the Program.

"Conservation has reached that stage," he says, "where all kinds of business and cultural organizations are becoming aroused, and they are beginning to ask, 'How does this affect us?' They need people in their own organizations who can answer that question in terms that they can understand. And this applies to any human activity, regardless of how remote it may at first seem from natural resources."

One of the few men who has this broad perspective and the teaching ability to go with it, Sears was the obvious choice to head the Program when it was founded two years ago. He has taught at Oklahoma and Nebraska Universities and is an expert in pollen analysis and paleoclimatology. Formerly chairman of the botany department at Oberlin College, he has gained a wide reputation as author and speaker on human culture and resource use.

Dr. Sears has organized the Program at Yale on the basis of a two-

Experiment in Learning

Professor Sears, students, discuss Yale timber problems with forest manager



year curriculum leading to the master of science degree. Although the entrance requirements are high, no student is barred because of his particular interests. Once in, he has a highly flexible plan of studies according to his needs in grasping the ecological-humanistic point of view.

The variety of courses taken by conservationists confounds the conventional graduate students at Yale. Simultaneous courses in the law school, and anthropology, sociology, and biology departments sounds like chaos! But anyone who has worked on a watershed-wide program knows that these are all of a pattern both built upon and determining the fate of natural resources. The freshness of this approach toward higher education is obvious when in most schools and departments graduate work means further narrowing of the area of study.

The scattered course work is tied down in the conservation seminar, perhaps the most important single part of the Program. This is a roundtable session, Dr. Sears presiding, often with an outside visitor or speaker, and the students themselves, who are about as diverse as the personnel in a Somerset Maugham story.

It is the kind of meeting that will be re-enacted in many variations as future valley and watershed associations are formed. If the subject under discussion is water pollution the students, a biologist, an engineer, and a sociologist are all compelled to reach for and understand each other's point of view. The experienced guidance of Dr. Sears insures that a constant thread runs through the whole discussion.

That this can be a potent learning process is attested by Roger Hale, an unusual member of the Program's first graduating class last June. A 50-year old Harvard alumnus with a son in Dartmouth, Hale braved the chaffing of his friends to return to school. He is a business man and board member of several manufacturing firms, has run his own timber operation, and has a keen interest in wildlife.

He learned something, too. He ran into new ideas about resource problems and was particularly impressed by the techniques and information on human populations in a course in demography. Long impressed by the effects of taxation and credit on land use on the private farm, Hale has undertaken a continuing research project on this problem.

His excellent, nation-wide survey



Roger Hale, right, delivers the seminar paper on taxation problems

is reaching every soil conservation district in the United States. It is an effort to determine how farm conservation practices are related to bank credit. The first to be returned of 30,000 survey forms was from a banker who had never thought of credit in terms of conservation, and who promptly bought a \$40 membership in the local soil district.

Only a few of the program's students are economically independent like Hale. Richard Ligenfelter took leave of absence from his Soil Conservation Service job in Idaho, packed his two children and pregnant wife into a 1936 car, and came east, bringing the household belongings in a two-wheeled trailer.

John Calhoun left a teaching position at St. Paul's school. Harry Doehne had sailed with the merchant marine for four years. Bill

Appel, an ex naval officer, had been business manager for the Experiment in International Living at Putney, Vermont. A few of the students are younger, however, and came directly from undergraduate college.

The first year in the Program is spent largely at course work. Most of this is in other departments of the university, in subjects in which the individual is weak. Often he is a lone conservationist in a room of foresters or anthropologists, and he learns not only the subject but how its disciples think. A biologist, for instance, may carry some biological work, but he is also expected to attend a special course in the Yale Law School called "The Legal Aspect of Conservation," and graduate seminars in the humanistic departments.

Four courses are listed in the Con-



Class of '53 meets informally, discusses course work in land ecology

servation Program itself. These are "Ecological Principles," taught by Professor G. Evelyn Hutchinson, of the Osborn Zoological Laboratory and a member of the Program faculty, the "Ecology of Land Use," by Professor Sears, and two seminars in conservation and individual projects.

The second year the students take some course work, seminars, and concentrate on their individual projects. The basic conservation issues are as prominent in the seminar meetings as in the world at large.

For instance, on the question of how far government should go in regulating land use, forestry management, or stream pollution abatement, the class is divided. Only a minority of the group expects to enter government service, and the

don Loery made a valuable synthesis of resource information in the Connecticut River Valley. Worked into graphic form from many sources, the result was a book published by the Connecticut Light and Power Company. All the valley's resources were considered germane, and the kinds of use made of them.

Another approach to the land use problem was made through a study of the people who work the farms. Trudy Huntington lived in Mennonite homes in small Ohio towns to determine the cultural influences which have made these religious communities famous for their sound land use.

As many as 30 visiting speakers meet with the Program seminar groups during the school year.

area in New Jersey, besides doing ornithological research for the Bermuda government.

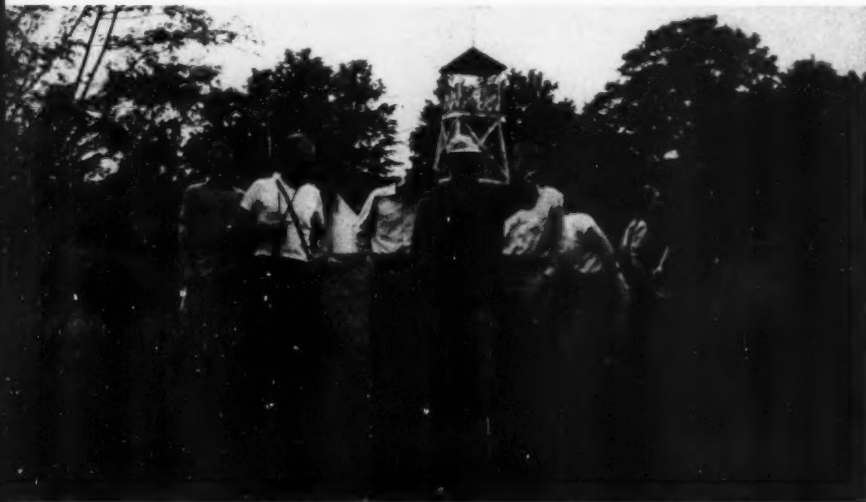
Informal idea sessions in the lounge of the Conservation Building serve as pressure valves. The whole group meets on Wednesday nights as the Conservation Club, an organization with by-laws, dues, and officers. Club meetings enable the first and second year students to meet together and outsiders to meet with the group. Students or guests give the program. The Club has sponsored once-a-month meetings in the form of public panel discussions on current topics.

The first of these was planned jointly with the Law School Forum. Five well-known speakers, representing both government and private industry, debated "A TVA for the Connecticut?" Other panels, jointly sponsored by interested groups on the campus, utilized the talents of many nationally known figures. They considered the question of federal regulation of private forests, the means of achieving stream pollution abatement, population pressures on recreation, a soil conservation policy for the U.S., and the problem of providing for the world's expanding population. By working with other campus groups, the conservationists aimed at the secondary objective of spreading awareness within the University and community.

The Club, working through the Program, has also issued the first of a series of publications, the *Yale Conservation Studies*, written and edited by the students with some outside contributors.

This journal is a first measure of the contribution of the Program's students. But the future holds the real test, in whatever professional fields they enter. They, and the Program, are gambling that ability at integrative thinking will make their services valuable among a people to whom conservation is increasingly important—and complex.

Their approach was stated by Dr. Sears in a recent issue of *AMERICAN FORESTS* (November, 1951): "Great operational skill and wisdom is required in educating both the public and its servants. The standards of general scientific teaching must begin at elementary levels. At higher levels the various sciences need to be even more knit together than they are at present. And professional workers in conservation must have not only a mastery of technique, but broad awareness and perspective."



The group studies weed and forest succession on abandoned farm, learns problems of a continuing agriculture on thin, rocky soils

group is far from depending on Uncle Sam for its future. Another healthy clash involves the aesthetic and intangible values versus the economic point of view, and the thinking on neither side is allowed to become ingrown.

The group has its bird lovers, but it also has members like Robert Teeters, a competent engineer and student of economics and public administration, and Charles Jones, a Harvard graduate with five years experience in business ventures and public relations, who help modify the climate of discussion.

Students spend the summer between years doing field work, often toward their thesis project. Two of these typify the kind of work that the Program students are expected to be capable of performing. Gor-

These vary from professors of world development schemes to saviors of nearby islands for wildlife. There are city and regional planners, industrialists, and representatives of forest industries, manufacturers' associations, agricultural groups, government agencies, and various private organizations. Many of these speakers urge the Program or its students to help carry on some campaign or other.

Invitations to speak before local groups outside the university enable members of the Program to organize and polish their own thinking. Other activities incidental to formal studies include a few papers at scientific meetings, book reviews, and field projects. Robert Perkins, for example, has been influential in the immense task of setting up a natural



Reuben B. Robertson



In Less Than a Life Span

As head of a leading southern paper firm since 1906, Reuben B. Robertson has helped nurture scientific forestry from infancy to young adulthood

By RAY GARRETT

A FEW years after the turn of the century a young Ohio lawyer left his native Cincinnati for North Carolina and a new career in an infant industry. The fledgling barrister was Yale-educated Reuben B. Robertson and the job for which he forsook a position with his father's legal firm was management of a wood fibre plant.

The year of decision for Mr. Robertson was 1906 when scientific forestry in the South was little more than a phrase on the tongues of a few farsighted pioneers. In the more than four and a half decades that have followed, both Reuben Robertson's adopted career and forest management have reached heights beyond the dreams of most men.

It was Reuben Robertson's father-in-law, Peter G. Thomson, who persuaded him that the challenge of managing a pulp mill outweighed the rewards of practicing law. Mr. Thomson, after organizing the Champion Coated Paper Company in Hamilton, Ohio in 1893, had decided Canton, North Carolina was the ideal location for a new pulp mill and that his son-in-law was the man to manage it. Reuben Robertson agreed to give it a try, and thus was launched an outstanding career in the pulp and paper industry.

Mr. Thomson selected Canton as the location for the fibre plant because it offered an excellent combination of a plentiful and cheap timber supply, abundant and intelligent labor, suitable water and accessibility to markets.

Among the earliest of the many friendships which Mr. Robertson and his bride, Hope, quickly made in their new location was that with Dr. Carl A. Schenck who was then forester for the great Vanderbilt Estate. It was Dr. Schenck who organized the Biltmore School of Forestry.

Mr. Robertson, in later years, credits these early contacts with Dr. Schenck's inspiring leadership for the sympathetic interest in the work of the scientific foresters which has continued throughout his business career.

The very thing which had influenced the selection of Canton as the site for the new pulp mill militated against whatever casual considerations of forest conservation there might have been at the time. Actually, little was known about good forestry practices. There were less than a hundred trained foresters in the entire United States, and the

number of areas managed for sustained yields was negligible.

The industrialists who depended upon forest products for their raw material were afflicted by an economy of abundance. The vast woodlands of the Appalachians seemed inexhaustible. When forest fires got started, they were allowed to sweep unchecked through the cut-over lands of the South. Cuttings were carried on with total disregard to future growth possibilities.

And small wonder. Stumpage could be bought cheaply. After it was cut, it could be replaced just as cheaply.

The easy and inexpensive acquisition of standing timber, coupled with the abundance of available labor, resulted in high production rates of forest products. Eventually they glutted the market, which meant cut-throat competition and ruinous prices. The forests were being rapidly depleted by practices which could only result in the de-





Two Champion foresters in a thinned stand of 32-year-old loblolly pine

struction of one of our greatest natural resources, unless something constructive could be done.

It wasn't easy to convince dollar-conscious individuals that their best interests, and those of the entire country, lay in the philosophy of farming, rather than mining the for-

think twice about future supply, unless he happened to be interested in long-term forest management. He had no monetary incentive to make him realize that improvement cuttings, the planting of seedlings or even the most rudimentary forms of forest fire protection, could pay off.

size, to meet competitive market conditions. In coordination with the pulp manufacturer, who is interested in total volume and is not so dependent on size, the two interests jointly permit a shorter rotation period than would be possible if lumber alone were the crop.

Logical as the premise reads after the fact, there was still the matter of developing good management practices. In those early days, very few schools of forestry had been established. Statistical information about woodlands of the section was both difficult to obtain and of doubtful accuracy when it was received.

Mr. Robertson took the lead in lending his support to the state and federal agencies which were just coming into being. He lost no opportunity to express his views on the conservation of forest resources to the general public. A convincing public speaker, he carried the new idea to audiences in many parts of the country. Among his official positions were: presidency of the North Carolina Forestry Association; chairmanship of the North Carolina Wood Utilization Committee, organized under the U. S. Department of Commerce; membership in the Southern Appalachian Research and Advisory Council to the U. S. Forest Service.

In 1920, Walter J. Damtoft joined Champion as its first professional forester. He came to the company after eight years with the U. S. Forest Service. By that time Champion had acquired about 100,000 acres of timber lands in the Great Smokies



Huge trailers keep wood rolling from forest to mill

est resources. When pulpwood stumpage was going at 25 cents a cord and sawlog stumpage was selling at anywhere from a dollar to seldom more than five dollars a thousand board feet, there was no practical encouragement for anyone to

The answer, which was a long time in coming and which is yet still far from complete, lay in properly coordinating the utilization of forest products.

The lumberman, working an area alone, can use only logs of a certain

area, purchased in large tracts from private sources.

Now began a program to obtain the sympathetic support of smaller land owners. Mr. Damtoft's duties at the outset were principally the clearing of titles, working out problems of transporting timber from the interior of the wooded areas by rail and other means, protecting the forests from fires, and the initiation of good, sound forestry practices.

In 1933 the government acquired the Smoky Mountain area for the establishment of a national park and Champion relinquished 90,000 acres for this purpose.

Diminishing supplies of wood which is followed, in a free market, by rising prices, helped furnish the stimulus necessary to shake landowners out of the lethargy that prevailed as regards the wastage of our forest heritage. But it needed vision and enthusiasm, too.

Since 1933, Champion has been engaged in carrying out an intensive pinelands development program in the Carolinas, Georgia and Tennessee. In 1936 Champion opened another pulp mill at Pasadena, Texas, near Houston, which is in the heart of the Texas pine belt.

Champion's special interest in Southern pine is based upon its own development of a method of bleaching pine Kraft pulp to make it suitable for the manufacture of white printing paper.

The development of better forest management, in Champion areas as throughout the country, has been vital to the national welfare. Pulp and paper people, with high wages exceeded only by skilled workers in the machine tool industry, are a stabilizing influence in many an industrial area. In western North Carolina, for example, pulp and paper is the largest industry as measured by the creation of income and expense.

The challenges, and the changes which have been brought about by meeting them, in Mr. Robertson's 50 years of devoted service to forest conservation have been nothing less than revolutionary. And it is within the life span of few men to be a continuous part of such a productive program.

It is clear that the coming of paper mills to the South was an im-



Champion's plant at Canton, North Carolina. It is ideally located to take advantage of a plentiful supply of timber



portant influence in spreading enthusiasm for and developing knowledge of timber conservation. By virtue of their very size and the enormous concentrations of capital involved in their development, the permanence of their raw material supply is a fundamental requirement.

But it is more than coincidence

that the long term best interests of the mills lie in the encouragement of the owners of small tracts to follow the same cutting practices that are essential for the proper management of larger acreages.

The development of electric power, of educational efforts, of permanent markets for forest products, have permitted paper mills to perform vitally helpful functions for the communities in which they operate.

The progress in wiser utilization of the products of our forests has been great since Mr. Robertson started his projects in 1906. He firmly believes that the forces of education, of far sighted self interest, of national necessity, should maintain the momentum that has been gained and so carry the science of forest utilization to far greater heights than could have been foreseen 50 years ago. He is emphatic that we have by no means reached perfection.

Mechanical planters speed Champion's reforestation





Joseph Washington, 72, great-great-grandson of Asali, Cherokee martyr, gives his grandson, Barry Robie, lesson on tribal drum



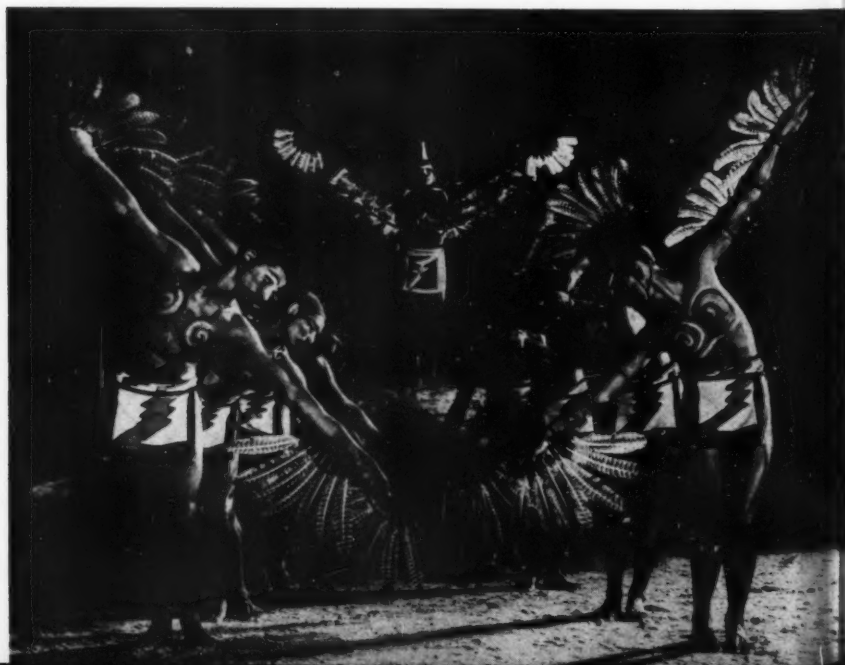
SACRED

Because of a Cherokee brave's martyrdom 114 years ago a remnant of the Smokies' first inhabitants still lives in the valley of the Oconaluftee



Cherokee woman demonstrates the skill of the basket maker's art

Cherokee Eagle Dance, handed down through thousand years of ritual





Main street of the village of Cherokee, host to million visitors yearly

CHEROKEE SOIL

By JOHN PARRIS

DEEP in the Great Smoky Mountains of North Carolina stands a remnant of the aboriginal forest and under its high, shaggy shoulder lives a remnant of the original inhabitants—the Cherokee Indians.

Both the mountains and the Indians are unique in this world of the 20th Century. Each has survived the most lethal weapons of progress—the mountains the ax; the Indians whisky and gunpowder.

The Great Smokies are among the ancients of the earth—old before nature conceived the Alps and the Andes, the Rockies and the Himalayas. On their slopes and in their deep valleys are the largest virgin red spruce and hardwood forests in the United States—more virgin forest, in fact, than in all the rest of the East combined.

Through the creation of the Great Smoky Mountains National Park it is all being preserved so posterity can see what the world was like when

it suffered the travail and spasms of its youth.

Under the eastern rampart of the Smokies is the 63,000-acre reservation of the Eastern Band of the Cherokee Nation. There, in and about the valley of the Oconaluftee, live more than 3000 Cherokee Indians.

From the beginning they have been there, still dwelling in their old homeland, planting their little farms in the mountain coves and beside the clear streams. Until recently their presence was unknown to the vast majority of the conquering race which swept long ago over the red man's country and drove him west beyond the Mississippi.

They go to the white man's school maintained for them by the government. They have learned the white man's ways and his language, though they have not forgotten their own. And, except on special occasions, they wear the white man's garb. But some of them keep in their hearts

the red man's ancient lore and maintain the red man's customs.

Nearly two centuries ago, the Cherokee were among the mightiest of the Indian nations. They held the entire Allegheny region—some 40,000 square miles—and claimed a boundary extending from Upper Georgia to the Ohio River, including the hunting grounds of Kentucky.

But the white man looked to the west for wing room and slowly began moving into the new country, holding with his rifle the land he took. The Cherokee protested and fought and were crushed, their villages razed by fire. Under this pressure they signed their first treaty with the new government of the United States in 1775.

Despite the treaties, the settlers continued encroaching on the Cherokee land, and the next 30 years were strewn with broken treaties and victims of savage and brutal fighting.

By 1814 the Cherokee Nation was
(Turn to page 52)



Study camp in the forest. Classrooms are in background, dining hall is at left, showers in center, and dormitories at right

Classroom with Roots

By J. V. HOFMANN

ON Thanksgiving Day 1928 I was the guest of the President and the Dean of the College of Agriculture of the North Carolina State College of Agriculture and Engineering. I have had reason to be thankful ever since for this invita-

tion to consider establishing a Forest School at State College.

The Forest School became a reality on February 1, 1929 when I left the Forest School at Mont Alto, Pennsylvania and reported for duty as Director. Preparation of the cur-

riculum and employment of a teaching staff to begin classes in the fall term were suddenly thrown into a hectic scramble in April 1929 when 46 forestry students from the Mont Alto Forest School decided to transfer to the Forest School at North Carolina State College.

This group consisted of seniors, juniors and sophomores, which necessitated classrooms, laboratories, equipment and a faculty before September. Forest areas for field laboratories were needed and since no funds were available, a plan for purchasing land on a self-liquidating basis was developed.

In order to purchase land on a self-liquidating basis long-term financing was required. For this purpose the North Carolina Forestry Foundation, Inc., was organized and incorporated as a non-stock, non-profit corporation for the sole use and benefit of the Forest School.

The Foundation has had some stormy periods and has withstood financial waves of tidal proportions, internal eruptions, national depres-

Double benefits—reeds furnish cheap feed for cattle, grazing reduces the fire hazard



**Students at North Carolina State College's
School of Forestry study the trees where they
find them—in the woods. Their laboratory is
the 80,000-acre Hofmann Forest, financially
self-sustaining and the pride of the school**



sions and war periods, but is still doing the tasks that were pronounced impossible by most public agencies and individuals, except the writer, and sometimes even he could barely see daylight through the gathering gloom.

The Foundation has bought and sold tracts of forest land and has helped acquire areas that are now operated by the Forest School. At present the Foundation holds title in fee simple to an area of nearly 80,000 acres located in Jones and Onslow Counties in eastern North Carolina. This tract has no interior holdings and is a part of the extensive land grants made by the State of North Carolina to David Allison during the period of 1790 to 1800.

The area of the present forest was acquired by the Jones-Onslow Land Company in 1909, and was sold to the Coastal Land and Timber Company in 1925. It was repossessed by the Jones-Onslow Land Company and the deed was conveyed to the North Carolina Forestry Foundation, Inc. on June 27, 1934.

Acquisition of an area large enough to operate as a business enterprise afforded an opportunity to demonstrate a land use program, and to establish the principle of developing forest land through its own resources. The area is a field laboratory for experimental tests in timber production and land use for the coastal plains of eastern North Carolina.

The forest includes the region known as The White Oak Pocosin. Tradition relates that the term "pocosin" is an Indian expression meaning "a swamp on a hill." Actually, that is an appropriate term for all such lands, because all pocosins are higher than the areas surrounding them. Pocosins are found only in southeastern Virginia and the coastal plains of North and South Carolina. The elevation of the forest ranges from 20 to 80 feet, with the highest sections near the north boundary. The interior is 10 to 20 feet higher than the surrounding country with a large wet area of more than 10,000 acres near the cen-

ter at an elevation of 40 to 60 feet, although some of the boundaries are within two miles of tide water.

When the early settlers came to this section they followed the fertile lands along the streams and cleared the better drained areas as needed for crops. Trees were a hindrance to them in their struggle for existence but as the settlements developed the timber became useful and later reached commercial importance. The timber operators proceeded unhindered and cut the good stands where they found them.

Even in the early 1930's a lumberman instructed his woods foreman thus: "Ver da timber is gut pay no attention to da line, I vill pay da stumpage; but ver da timber is poor vatch da line clos." Railroads were extended through the heavily timbered sections and many valuable stands were cut within the present boundaries.

Fires were unheeded in the forests except when homes or improvements were endangered. The reasons for starting fires were myriad, ranging from brush burning to the statement of one old lady, living near the forest who after a lingering illness said "I am ready to die but I would like to live long enough to see one more big forest fire."

Boundary location was one of the first requirements in getting the land under control. The total distance around the forest is more than 125 miles with the boundaries often located at the wishes of the adjoining land owner. All surveys in this section are by metes and bounds or perhaps better described by a student in an examination when he stated: "The surveys are by leaps and bounds."

After almost 20 years nearly all of the boundaries are located, many by agreement and adjustment. When a line calls for N 20°30' E-2400 feet D.B.H. it is rather difficult to locate the exact point. As a forester D.B.H. means diameter breast high to me but I did not recognize the term in surveying until I found it meant "distance by hollering."

Practically all tracts of land are

plotted by a closed survey but the last line invariably reads "from thence to point of beginning," which means it was closed from the point where the last course and distance ended. These confusing survey methods cause no end of boundary claims and misunderstandings.

In most cases a fair adjustment can be worked out although some become involved and difficult to settle. Public relations in all of its phases is the basis for solving these situations and the cooperation of the people, who are our neighbors, has been very helpful and commendable.

(Turn to page 60)



Top—loblolly pine plantation 16 years old along well-drained side of a canal. Bottom—15-year-old pine on opposite undrained side



Mysterious "hows" and "whys" in the relationship of rainfall to the forest-streamflow are being solved by U. S. Forest Service researchers on the Coweeta watershed

Mountain Water

By ELLIOTT MERRICK and E. A. JOHNSON



Hardwood forest was cut here in 1941. Trees were left, porous forest soil was not disturbed. Since, yearly water yield has increased 40 to 60 percent, but there's been no increase in storm-peak flow, no erosion. Studies continue on longevity of forest-soil capacity



THOUSANDS of scientists, foresters, teachers and students have visited Coweeta in the last few years to learn about the mysteries of water in the ground.

You have a certain amount of rain falling on the forested mountains. How much of it runs off, how soon? How much is used by the vegetation? What can you do to slow the flow and reduce erosion? On the other hand, how can you get more water if you don't have enough?

Then there's the matter of quality, muddy water, and streambeds raised by silt; what logging techniques or steep-land farming practices are most or least damaging to water?

The Forest Service men at Coweeta don't have all the answers and don't pretend to, but they're on the track of some very important ones, answers that are tied in closely with vast flood prevention programs.

The job at this U.S. Forest Service research station is to help find ways and means of handling the greatest water reservoirs there are. These are the natural forest reservoirs, the mountain ranges where rain-bearing winds from the oceans precipitate their loads. The water that is stored, for instance, in the soil of the Rock-





One of Coweeta's 31 stream gages recording outflow at flood time

ies, the Cascades, the Sierra Nevada and the Appalachian chain far exceeds storage in all the man-made reservoirs that can ever be built on this continent.

Studies have already shown that by manipulating vegetative cover on the earth's crust man can set ajar or close more tightly nature's ponderous water gates, somewhat as engineers regulate the flow from concrete dams.

Records from 31 stream gages, 26 observation wells, nine weather stations and 87 standard rain gage stations are being taken in this outdoor research laboratory in the beautiful mountains of western North Carolina. The program of charting incoming rains and outgoing stream flow from small, individual drainage basins has been going on for 18 years.

Because the records grow more valuable year by year, they are kept in a fire-proof vault. Experts from half way around the world have come here to study and analyze, to learn, and to contribute.

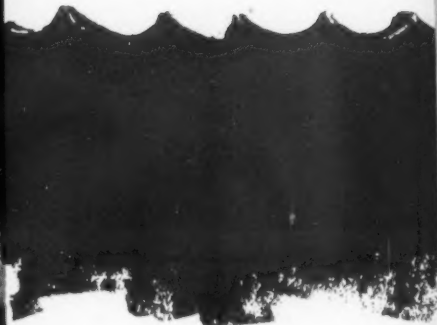
Coweeta studies have shown that in a typical Southern Appalachian wooded watershed only a little more than half the rain ever finds its way downstream. Nearly 40 percent of

the water that falls as rain is taken by trees and other vegetation.

Eleven years ago a 40-acre drainage basin was completely cut and natural regrowth has been cut back since then. Records show a tremendous increase in water yields now that the trees no longer drink the water up. Watershed managers have been much interested in the fact that a 100-percent increase takes place in the late summer months when natural supplies of water are lowest.

Another way of saying this would be that trees use the greatest amount of water in the hot sunny summer months at the same time that people and cities demand the most. By reducing transpiration, the cities could get more, but now the question remains, how long can this experimental watershed remain without trees and still retain forest soil structure that so efficiently absorbs rainfall and serves as a storage reservoir.

By no means recommended for widespread application, the experiment has indicated total and seasonal quantity of water an Eastern forester has available to work with when he manipulates the forest. Partial adaptations of this drastic, and obviously precarious, treatment are now being tried.



USFS photos



Studies show rhododendron understory uses 3.6 inches of water each year

A major aim of the Coweeta studies has always been to find the precise effect of different kinds of land use. This is done by means of before-and-after comparison on treated areas, in addition to comparison with adjacent control watersheds. It has long been known that overland flow from bare cultivated fields during intense storms is much greater than from forest land, but the question is how much greater.

In 18 years of observation no overland flow from forested areas has



Thousands of scientists, foresters, teachers and students have visited Coweeta in the last few years to study water experiments

been observed, despite the fact that there have been storms so intense that 11 inches of rain fell in 17 hours. One study shows that water can be absorbed in typical porous forest soil 17 times faster than on trampled pasture.

Maximum flood flows are 25 times greater on trampled pasture areas than they were when the land was in undisturbed forest. On a forest which has been converted to a typical mountain farm, the trampled pasture produces 60 percent of the storm runoff, though the trampled area makes up only 20 percent of the watershed.

This is illustrative of conditions in many Southern Appalachian valleys where a small percentage of abused, steep hill pastures produce most of the flood damage. Often these low-value sidehills cause permanent damage to valuable bottomlands. Such slopes should therefore be kept in trees.

The present tendency in mountain logging is to reduce the amount of ground skidding by taking the hauling trucks to the job. As a result, hundreds of miles of truck trails have been punched up and down the mountains by bulldozer operators who take little thought of road maintenance or adequate drainage. To test the effects of this practice, a 212-acre watershed at the Coweeta Hydrologic Laboratory was cut and logged by a local contractor using the usual methods with which he was most familiar.

At first, logs were skidded down the natural drainage channels by horses, in keeping with common log-

ging methods. Later, a 2.3-mile truck road was bulldozed to the operation in a location chosen by the contractor. Hauling costs were several times what they needed to be, and the operator could only haul during dry times. Fish pools became gravel bars.

From this area, logged without plan or restriction four years ago, erosion is still damaging the stream. In comparison with clear control streams, the flow from the logged area is so muddy during storms that you can't see a pebble one inch below the surface of the water. Furthermore, all the water from an 1880-acre drainage basin to which the logging stream is tributary was severely damaged.

Formerly, the larger stream had run clear; during and after the logging job it would have required filtration for municipal and industrial use. Over its 2.3-mile length, the truck road surface has eroded down an average of eight inches, and soil displaced would fill 1200 two-cubic-yard dump trucks.

Many groups of foresters, land managers and logging operators have visited the area and seen accurately measured, quantitative proof that logging can be a primary cause of erosion and sedimentation in forested mountain streams. As a direct corollary, timber sales on more and more jobs in the East are now specifying that roads be laid out by engineers and foresters, with a view to preserving water values.

It is becoming generally accepted that better road location, better construction and drainage, and better

maintenance save money for loggers as well as for water-users. Here is one of many instances where knowledge makes the difference between use and abuse.

In another study, the laurel and rhododendron understory characteristic of Southern Appalachian hardwoods was cut on a 70-acre watershed. Results showed an increase equal to 3.6 inches of rain each year for the first two years after cutting. The highest rate of increase occurred during the summer months. The increase is now, three years after the cutting, tapering off.

Cut rhododendron stubs sprout back rather slowly, so it is doubtful that such sprouts could be leveling off the curve of increase. Rather, indications are that the overstory trees have adapted themselves to the increased supply of water and are using it.

If so, the 3.6-inch dividend of water is assisting timber growth instead of nourishing a relatively worthless shrub. (Heavy stands of rhododendron and laurel are impeding forest growth and timber regeneration on an estimated two million acres in the southern mountains.) As the studies continue a clearer picture will emerge.

Many people have noticed that streams in summer are often lower in the late afternoon but that the water level rises during the night. A rock exposed at sunset will sometimes be covered at dawn. Also, trees along the stream bank, with their roots in permanent ground water, transpire abnormal quantities of water.

Is there a cause-and-effect relation, and could the elimination of this heavy transpiration draft be a cheap way of increasing water yield? To test this theory, the trees and shrubs within 15 vertical feet of the stream bed were cut on another experimental watershed. This was all done during the course of a few days in midsummer, at a time when the stream flow was exhibiting a very definite diurnal fluctuation.

The cutting eliminated this fluctuation—indicating that it has been caused by transpiration draft. About 12 percent of the total area of the watershed was cut. The maximum daily increase in yield was about 20 percent. The annual increase was less than ten percent.

It is possible, however, that streambank cuttings, unless carefully undertaken, will raise the stream temperature above the desirable lim-

(Turn to page 38)



600 Voices in the Woods



NCFA officers: seated l. to r., J. V. Whitfield, first vice-president; R. W. Wolcott, president; C. G. Spencer, second vice-president; standing, l. to r., R. W. Graeber, secretary; E. M. Hansen, treasurer

The North Carolina Forestry Association, founded 41 years ago, is a still-growing guardian of the state's natural resources

By WADE LUCAS

WHEN the North Carolina Forestry Association, a private, non-stock organization was first organized in 1911, little was being done on a broad scale to promote the protection and development of North Carolina's forest, soil, water and wildlife resources. Nor was there much activity to perpetuate the Tar Heel State's forest resources by wise use and reforestation of cut-over and idle lands.

The state geologists in 1823 made a start toward conservation of North Carolina's minerals and water. Other state agencies also went to work, but it was not until the creation of the Geological Survey in 1891 and the State Geological and Economic Survey in 1905 that efforts were made to promote conservation of North Carolina's vast natural resources, including its more than 18 million acres of woodlands.

The Geological and Economic Survey was replaced by act of the North Carolina General Assembly of 1925 in authorizing the State Board of Conservation and Development and within its jurisdiction the present North Carolina Department

of Conservation and Development. Included with a number of other conservation agencies in the department is the Division of Forestry.

John Simcox Holmes, who was North Carolina's first State Forester and who retired in 1945 after having given a lifetime of service in promotion of better forestry practices, was a moving spirit in the organization of the North Carolina Forestry Association in 1911. Mr. Holmes, now in his 80's, still retains a keen interest in better forestry measures as any Tar Heel forester will testify.

The North Carolina Forestry Association, which meets jointly with The American Forestry Association at Asheville, North Carolina, on October 12-15, now has about 600 members and most of them are active.

Like many other organizations, the N.C.F.A. has had its ups and downs over the years, but under the direction and inspiration of its current president, Roger William Wolcott, it appears to have had that proverbial "shot in the arm" that it needed.

A native of Cheyenne, Wyoming, Wolcott received his education at

the University of Nebraska and later graduated from the Colorado State College's School of Forestry. He now lives in and makes Raleigh his headquarters as he serves as district superintendent, woodlands department, International Paper Company, in its pulpwood operations in North Carolina and adjacent states.

An energetic sort of fellow, Wolcott and other officers and members of the association, including Don P. Johnston of Wake Forest, North Carolina, a past president of the N.C.F.A. and now president of The American Forestry Association, have had the whole-hearted cooperation of the North Carolina Department of Conservation and Development and its Division of Forestry in promoting better forestry practices in the Tar Heel State.

Also instrumental in giving new emphasis to better forestry practices and forest management in North Carolina are the members of the North Carolina Forestry Council, a professional foresters organization that came into being a few years ago. Dr. Richard J. Preston, dean of the

(Turn to page 48)



Highest peak east of the Mississippi, Mt. Mitchell tops even the clouds. Summit is accessible by automobile from Blue Ridge Parkway

Magnificent Mt. Mitchell

NORTH Carolinians are justifiably proud of the system of state parks developed and operated by the parks division of the North Carolina Department of Conservation and Development.

Delegates and visitors attending the 77th annual convention of The American Forestry Association, October 12-15 in Asheville, North Carolina, will be able to visit one or more of the Tar Heel State's 16 state parks, as will members of the North Carolina Forestry Association, holding its 41st annual gathering at the same time.

Of primary interest to the visitors will be famed Mt. Mitchell State Park, which is located within easy driving distance of Asheville on the beautiful Blue Ridge Parkway.

Of more than passing interest, but something that is taken as part of the state's progressiveness by the vast

majority of North Carolinians, is the establishment by the department as far back as 1939 of the first state park for Negroes in the entire Southeast. This area known as Jones Lake State Park is located in Bladen County in the southeastern part of the state and is heavily patronized by Negroes from a number of states. The state also maintains another park for the exclusive use of Negroes at Reedy Fork in Wake County near the capital city of Raleigh. These, as are the other parks, are open all year.

That North Carolinians as well as visitors from other states appreciate the state parks is demonstrated by a 23.5 percent increase in attendance during the first six months of 1952 at the 16 parks. The 1952 total was 573,967 as compared with 464,026 for the corresponding period in 1951. Total park attendance last year was

1,178,039; estimated attendance for 1952 is 1,500,000.

Since the end of World War II, the state of North Carolina has spent \$1,500,000 for permanent improvements of its state parks. The State Board of Conservation and Development at its mid-summer 1952 meeting adopted a resolution in which it will ask the 1953 North Carolina general assembly and succeeding biennial gatherings of the state's lawmakers to make available \$5,250,000 during the next six years for permanent improvements at the state parks.

George R. Ross, director of the Department of Conservation and Development, and Dr. C. Sylvester Green of Chapel Hill, North Carolina, chairman of the Board of Conservation and Development parks committee, together with other board members, have given Tom W. Morse, longtime superintendent of the parks division, and his aides their wholehearted cooperation in enlarging and modernizing the facilities of the 16 state parks.

While considerable work has been done on all state parks in general and at Mt. Mitchell State Park in

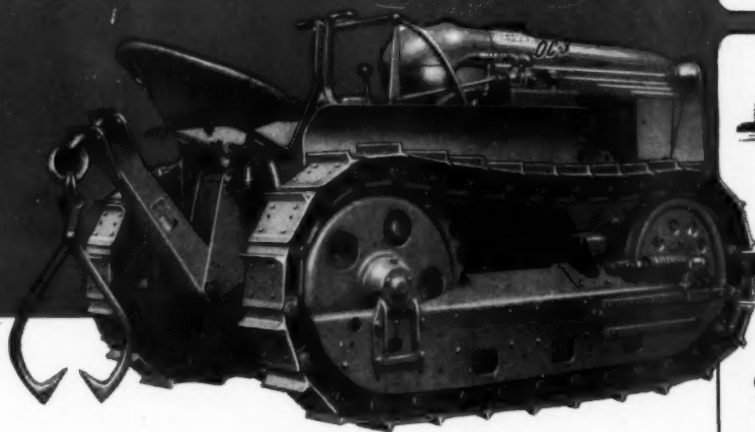
(Turn to page 40)

Mt. Mitchell, one of North Carolina's 16 state parks, is located within easy driving distance of Asheville. This lofty area wears Nature's full regalia in October

They Log Sitting Down

with the

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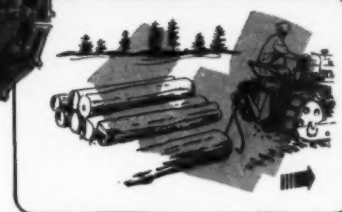
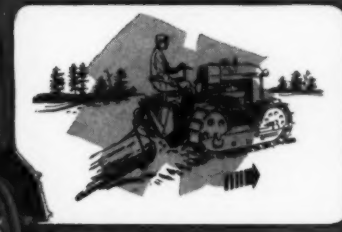
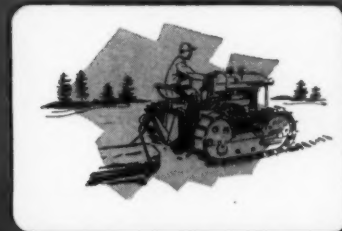
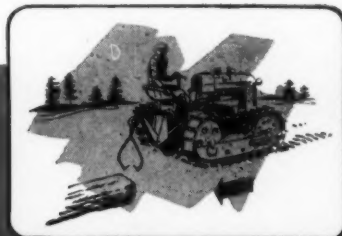
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Chlorophyll

(From page 8)

wash doesn't go into dog food, and what goes into chewing gum isn't contained in a tooth paste. The demand for chlorophyll formulas for pharmaceutical products alone (ointments, for instance), taxes the capacity of the factory and the staff.

How is chlorophyll extracted and made up into various forms? Those are secrets that Van Sant will not divulge. All that can be said is that a crushing process is used on the plants and that the substance is extracted and mixed with various solvents—water, oil and alcohol being the principle ones. The factory resembles a small oil refinery in outward appearance. Only qualified persons connected with the company are allowed inside. The press is definitely excluded.

It is a fairly generally accepted belief that many, if not most, discoveries are accidental. Van Sant definitely disagrees. He says an "awareness" on the part of any scientist or chemist often results in the discovery of a substance or property which was not necessarily the original goal.

Many of the uses of chlorophyll today were accidental in the sense that they were not deliberately sought after. The deodorizing action of chlorophyll, the discovery of which has already been outlined in this article, is one such "accident." Others will follow, but according to Van Sant, they will be the result of intense research during which the scientist is alert to any and all possibilities that may present themselves.

At the beginning of this article it was stated that chlorophyll could out-value all the minerals in the earth put together. Here are a few statistical facts to substantiate that statement:

An acre of average vegetation, trees included, produces about 40 pounds of chlorophyll. That comes to more than 25 thousand pounds per square mile. Most of the area of the United States is covered with some sort of vegetation. And when you consider the entire vegetation producing area of the earth's surface, the potential amount of chlorophyll available becomes astronomical. And it will renew itself as long as the sun shines and vegetation grows.

It would seem that unless something cataclysmic happens, there will be enough to go around no matter how many new uses for it man discovers.



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Mountain Water

(From page 32)

its for trout. Studies are in progress to ascertain whether stream temperature can be slightly raised to produce more trout food, while still remaining below the limits of tolerance for game fish.

In any project involving water supply, hydroelectric power development, or the production of agricultural or forest crops the measurement of rainfall is important. But a forest canopy has a significant influence on the amount of precipitation reaching the forest floor. And since rainfall is usually measured in the open, such measurements, if applied to forests, must allow for amounts intercepted by foliage.

Most interception data have been presented on a single-storm basis with no monthly, seasonal or annual figures for precipitation. Based on 15-year records for three forest types at Coweeta, the annual average percent of precipitation intercepted by the forest canopy varies from 11 to 17 percent. This is the equivalent of eight to 12 inches of rainfall annually, depending on the number and type of storms.

Variation within the forest type is dependent on size and number of storms, the largest interception being associated with the convectional type summer storm. For instance, in a well-stocked forest stand a summer afternoon shower of 0.25 inches of rainfall or less its practically all intercepted before reaching the forest soil. Interception is less in winter than in summer, with the seasonal differences being greater for hardwood and less for pine.

How to use the land and still maintain a reasonable equilibrium between deterioration processes and rehabilitation processes is a local problem in various sections of the world. Understanding those physical processes is the first essential.

As the facts of forest-streamflow relations become better known, they will be integrated into a management program directed toward the maximum utilization of all forest resources—water, recreation, wildlife, and timber. In this integrated picture, the utilization of one forest product will be carried out without jeopardy to other forest resources.

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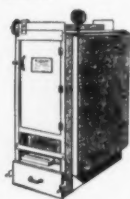
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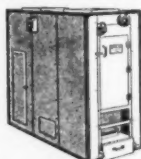
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Mt. Mitchell

(From page 34)

particular, the job is by no means done.

It was back in 1915 that Governor Locke Craig, who was born in the Asheville area, used his influence to secure from the state legislature an appropriation of \$20,000 for purchasing land for a state park in the Mt. Mitchell area. This area, Governor Craig specified, was to include a tract of virgin spruce forest and the summit of Mt. Mitchell "to relieve this famous mountain from private control, that the people of North Carolina and tourists from all parts of the world might have the privilege of free access."

Mt. Mitchell, one of the best known mountain peaks in the world, was named after Professor Elisha Mitchell of the University of North Carolina, who made many explorations in the vicinity and who is buried on the summit.

Consisting of 1224 acres, Mt. Mitchell's many attractions include the stone lookout tower that was given to the state in 1927 by Col. C. J. Harris of Dillsboro, North Carolina "for the benefit of the people of the state and the permanent protection of the forests of the region."

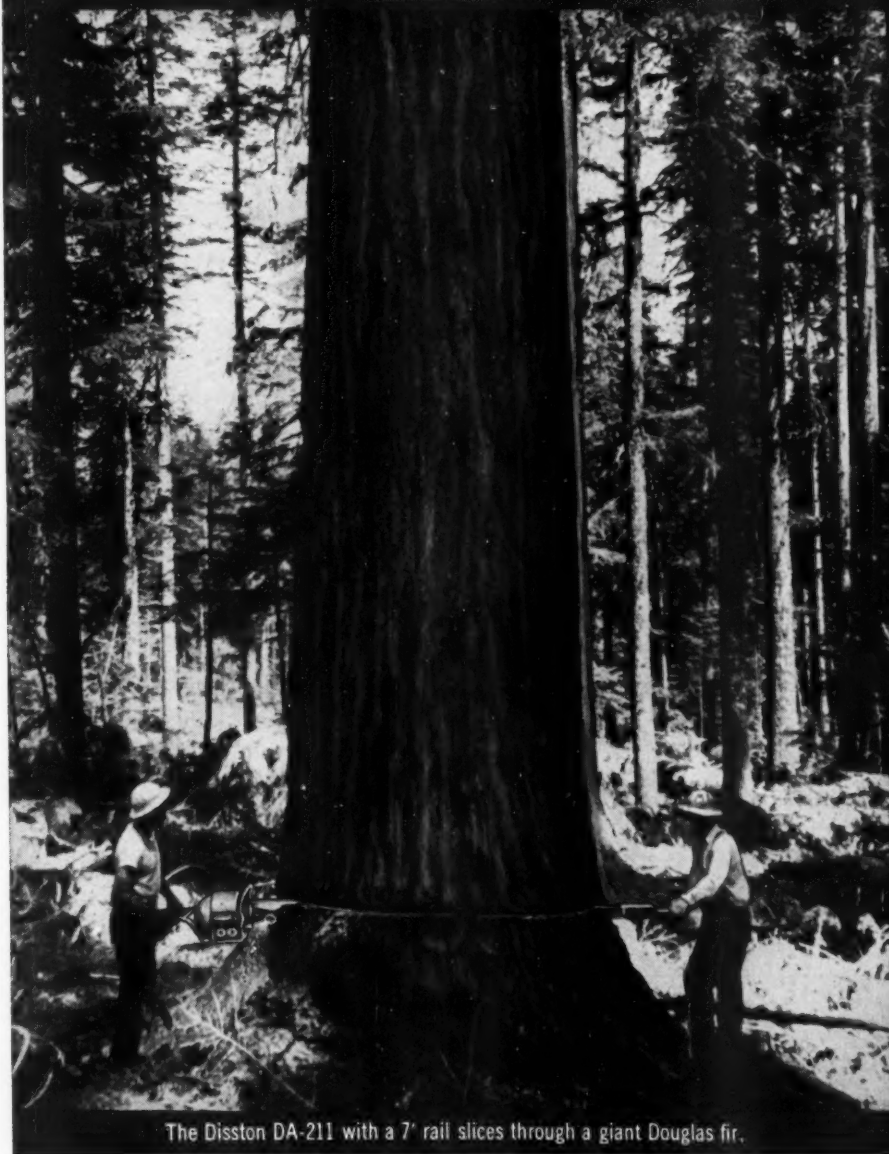
The permanent year around staff at Mt. Mitchell State Park consists of a park superintendent and a park ranger. Additional personnel is employed during the summer months. The park superintendent and the park ranger coordinate fire lookout activities with the U. S. Forest Service and the State Forest Service.

A picnic area, a tent camp ground, water and sewer systems, a parking area, residences for the superintendent and ranger, maintenance buildings, a refreshment stand, and a park museum are among the facilities that have been constructed as a part of the present permanent improvements program. A contract has been let for a park community building, which will include a restaurant, and arrangements are being made to construct power and telephone lines to the park area.

A U. S. Weather Bureau station is maintained atop the towering mountain to enable observers to keep abreast of the vagaries of Old Man Weather. It can and does get cold on top of the famous peak. An unofficial reading on New Year's Eve, 1928, showed the thermometer registering 25 degrees F. below zero.

(Turn to page 42)

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Mt. Mitchell

(From page 40)

The mammals of the park consist of black bear, small red squirrels (boomers), ground hogs (whistle pigs), wild cats, small skunks (civet cats), and several species of mice and rats. An occasional report of a panther in the surrounding country has led to the belief by some in past years that this type of "varmint," as it is known in western North Carolina, may pass through the park now and then.

Plant life abounds on Mt. Mitchell. Like the climate, it resembles Canada more than Carolina. The forests are almost pure balsam and spruce, although Frazer balsam, red spruce, yellow birch, paper birch, red cherry, mountain ash, hemlock, and some other species may also be found.

Shrubs and herbs also are abundant in the park.

Mother Nature is at her best in Mt. Mitchell State Park during the month of October. Her smiles upon this towering area are those of a loving mother who adores her own offspring.

Your Shade Trees

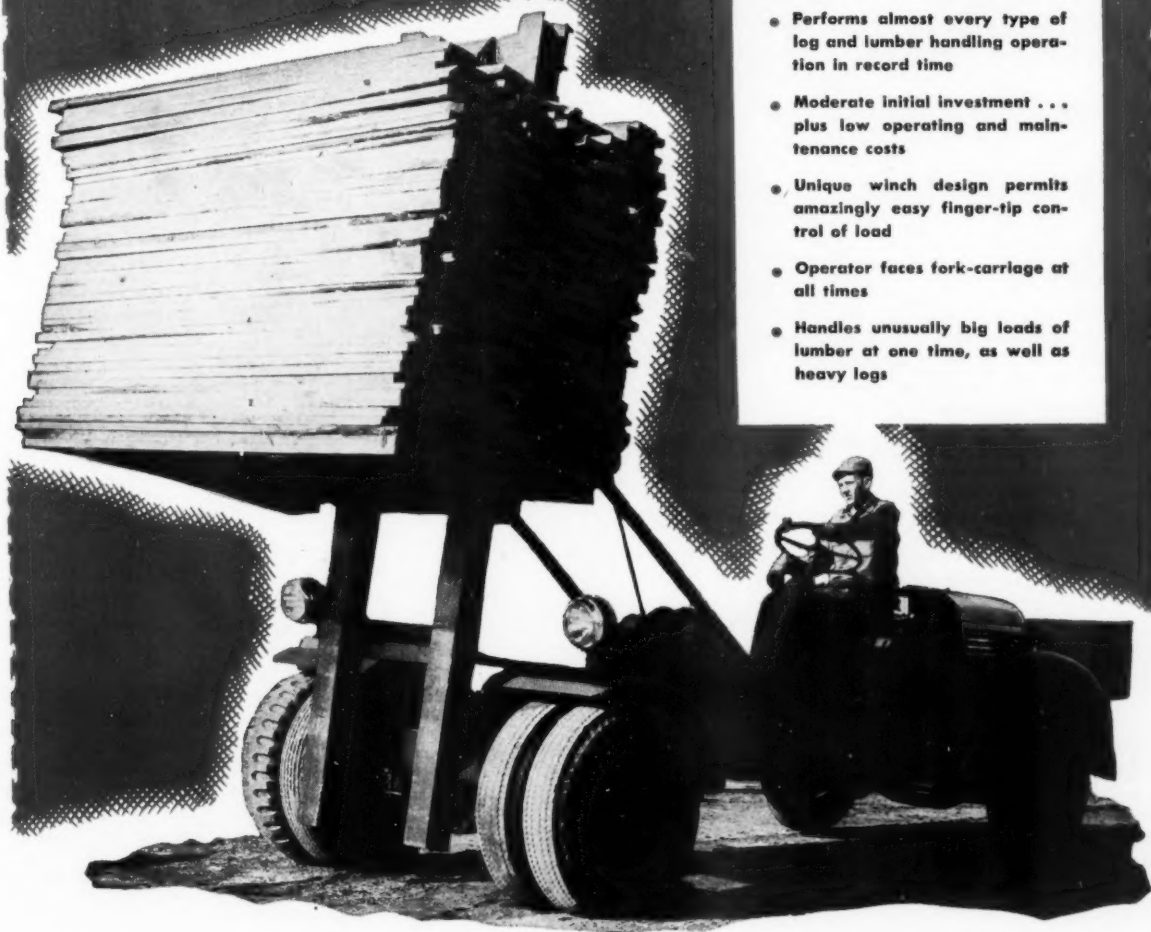
(From page 9)

The proper time of year for pruning has been the subject of no little controversy and some investigation, although most of the real scientific work has been done on fruit trees. The old horticulturist used to say that, "the time to prune is when your saw is sharp," and in general he was just about right. Wounds heal more quickly, however, during the spring and early summer and when possible to do so, it is well to take advantage of this law of nature.

The death of an occasional branch rarely is an alarming symptom but when an unusually large number of dead branches appear, the condition may be serious. The underlying cause is seldom easy to detect and not infrequently may be a combination of such factors as unfavorable weather; lightning injury; atmospheric contamination by soot or fumes; root injuries, either physical or chemical; inadequate or superfluous water supply; insect or disease attack; and mechanical injuries of various kinds. Professional advice may be needed to trace the true cause of the death of many limbs and to prescribe treatment for rehabilitation.

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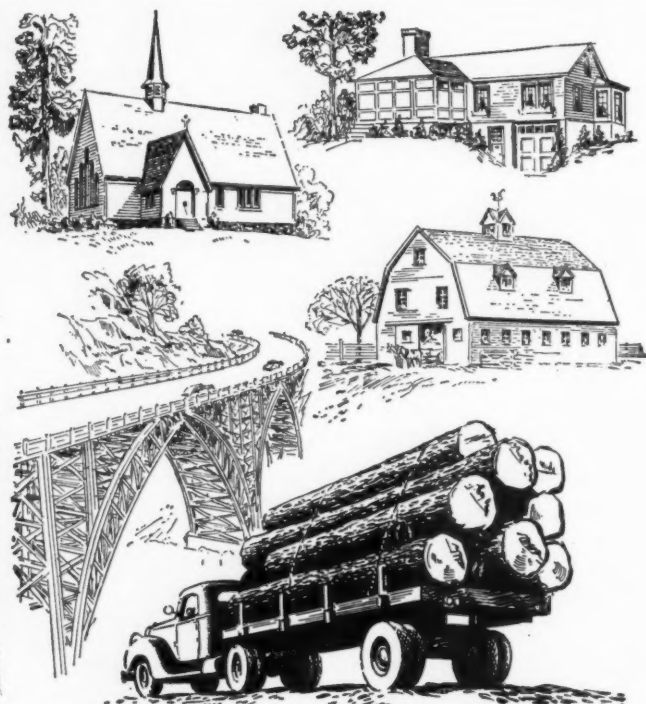
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Own a Pet Bruin

(From page 15)

have the necessary strength. And to apply some other mode of pulling-power without human feelings and limitations meant that Toby's head was liable to come loose at the first joint and drop off inside the can.

Hence to the machine shop went one of our members and down came the little cart with two cylinders thereon and a man with an acetylene cutting torch. This was the only way out for Toby's head; a major operation. Split the neck of the can and lay it open. By this time our pet bear was breathing pretty hard, gulping all the air he could get through the few pick holes we drove in the can. And for once he was quiet.

But the minute the man with the flame-thrower started to cut the neck of the can with fire, Toby reverted to type. Gone was that civilized veneer and finesse we had blessed him with. Ropes tightened and the saplings shook.

At best, the intense heat of an acetylene cutting torch is no mild sunburn at three paces. And when it cut through the metal and hair and skin and started to fry reserve, winter fat around Toby's neck, he went wild. The rope holding him down by the right, rear leg snapped and for a time it looked like the job would go unfinished. But with speed and lots of luck and surplus rope, we snagged the threshing foot and soon had Toby back in operating position.

"Step on it, Bill!" I yelled to the mechanic. "That little tree isn't going to bend forever!"

He did. Cut deep and quick and in a little while had Toby's head out of the can without too much apparent damage. But when that head rolled out and jerked up to look around, it wasn't pleasant to look at. All we could see was teeth, burning eyes and froth at the mouth. Here was our Toby Bear as mean a looking killer as ever painted by Mr. Remington. He was nothing to take into your arms and say, "I'm terribly sorry, Toby!" All he wanted was "up" on his four legs. Then he'd show us.

"Better shoot 'im before he kills somebody," the Chief Ranger suggested. I saw him fingering his Colts.

I voted negative. I couldn't see it that bad. After all, Toby had been a part of warehouse operations for quite a while. And in all fairness to

(Turn to page 46)



A new high in "weed" tree control!

A new forest practice which already is proving its worth is basal spraying to control "weed" trees shading out young pines and other desirable timber species. Basal spraying of brush stems or tree trunks with Esteron* 245 in kerosene, diesel or fuel oil is more economical than cutting, and regrowth is reduced to a minimum. New seedlings and young trees of desirable coniferous or hardwood species, which cannot compete so well with older or more numerous "weed" trees, grow more rapidly when these "weed" trees are controlled.

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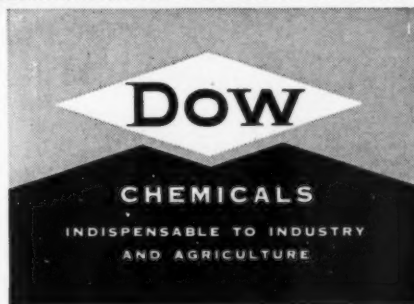
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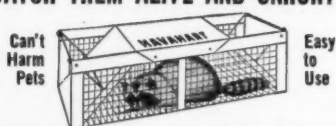
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Own a Pet Bruin

(From page 44)

a bear, the crew figured that we too would have ended up by being hot under the collar under the circumstances. So calling for all human clearance of the shop and utility area, we got our sharp knives out and at a given word, slashed the ropes holding Toby down, then made a run for it.

"Slam!" We just did make it through the door. I was the oldest and the slowest on foot and the last to come in. And Toby was right on my heels in the big stretch. No sooner had that sliding door hit the end when Toby hit it in closing and made it buckle. And from the sounds of his disappointment through those planks, I knew who was lucky. He wasn't remembering a single, pleasant incident of his young life. How we slaved for him. The wholesale money we had spent on his appetite.

But there were six grateful, panting and puffing guys, happy over the fact that Toby was out of the can. And doubly happy over the fact that a strong door was now separating us from our beloved pet. We were leaning around on boxes and against the counter, catching our breath and grinning, when suddenly padded feet hitting floor boards reached our ears.

It sounded like something we had heard a thousand times; from the time it was a little bounce until it matured into a firm "thump, thump, thump!" I glanced at the boys and they were turning pale—like myself. We froze together—inside and out. In our haste to free Toby, we had forgotten to check on the four other side entrances to the warehouse. He found one open.

"Eeeeeeek!" That's about all any of us could have squeezed out anyway. And it wouldn't have helped. There stood Toby, blocking the rear exit with his broad shoulders and a forest of bristling hair. He had that killing stanch one often sees in sports magazines, a Remington painting advertising cartridges. The only thing wrong with this life picture was that none of us had a horse to rear up and ride out on. Nor a shootin' gun. We were all afoot, cornered in the dead L of the warehouse.

So without even as much as a claw hammer in hand for self defense, some of us were doomed. And I be-

(Turn to page 48)

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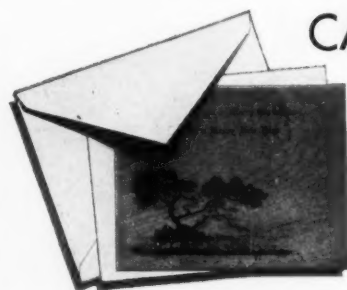
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HIGHLANDS, N. J.

Own a Pet Bruin

(From page 46)

ing the Boss Man of the crew and the warehouse, I felt duty-bound to my fellow warehouse-men. Wasn't Uncle Sam paying me three cents more per hour for thinking? So I started on strategy:

"Little Toby Bear! Our little Toby! You want some brown sugar, Toby? Or a nice, thick slice of Swift's Premium ham? Sit up an' ask for it, Toby! Sit—"

And believe it or not, that little sing-song broke the tossing of his head and tempered the snarl. Stayed the execution. Immediately my good helpers found voice too and grabbed off the chant with variations. Even promised Toby strawberries for supper which we didn't have and probably couldn't buy short of a thousand miles.

And again, believe it or not, those danged fool promises did the trick. Lay smooth the bristling hair on Toby's back and brought about some semblance of his old, smiling nature. He came over to us in his loose wobble, still a little hurt but willing to forgive and forget.

And if you think that we didn't fall on our Toby Bear, bestowing love and kisses, you're crazy. To love that little old bear was far more fun than any funeral any of us had ever seen.

600 Voices

(From page 33)

North Carolina State College's School of Forestry, is Council president. Included among its members are: Dr. Clarence F. Korstian, dean of the Duke University's Graduate School of Forestry, State Forester Fred H. Claridge, and President Wolcott of the N.C.F.A. The Council is one of the moving spirits behind the long-range forestry program that was evolved in the state about two years ago.

Other officers of the N.C.F.A. in addition to President Wolcott are: J. V. Whitfield of Burgaw, first vice-president and a member of the North Carolina General Assembly, where he has long been a leader in conservation of the state's natural resources; Colin G. Spencer of Carthage, second vice-president, Ralph Edwards of Morganton, third vice-president, R. W. Graeber of Raleigh,

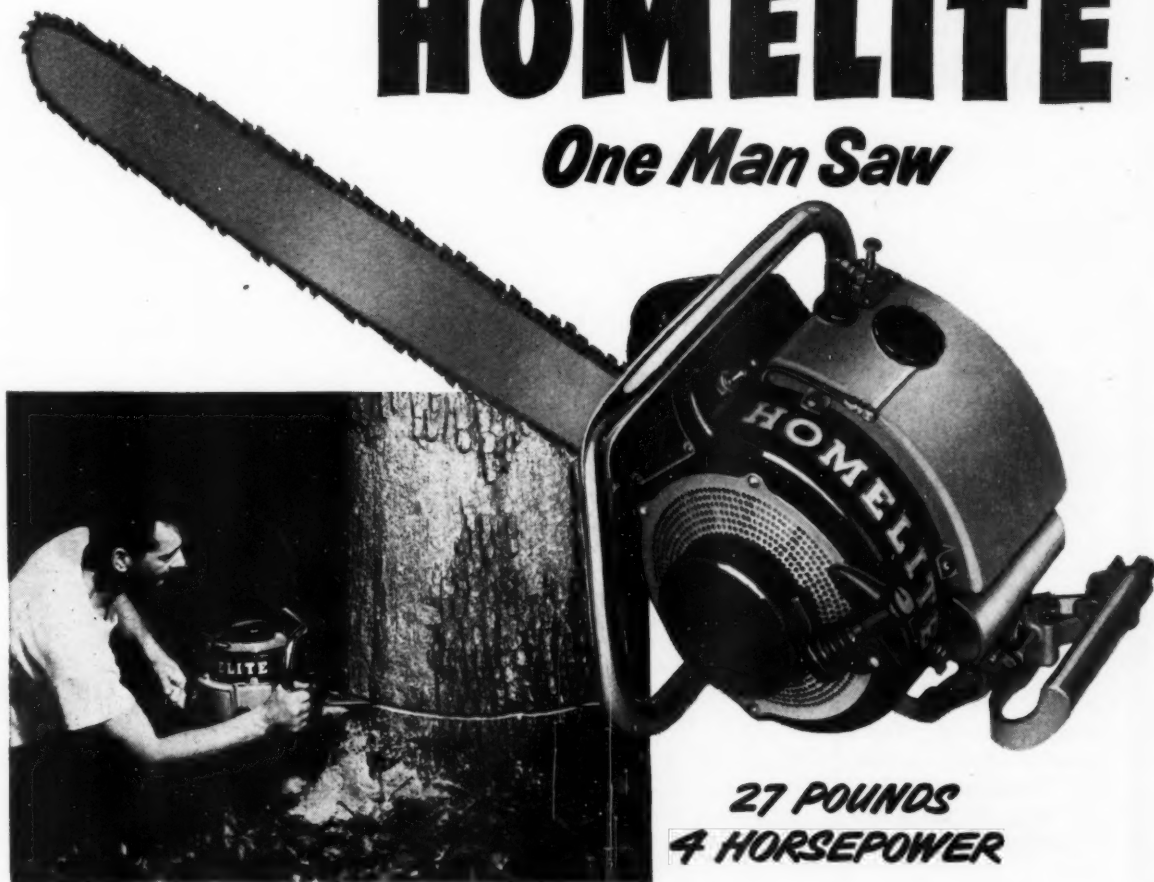
(Turn to page 50)

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600 Voices

(From page 48)

secretary, and E. M. Hansen of Raleigh, treasurer.

Among the top promotional projects of the association is the "Keep North Carolina Green" program. It is interesting to note that the association and the state's Division of Forestry gave such whole-hearted backing to what is known as the Pocosin Club at New Bern, North Carolina, that the U.S. Forest Service sent one of its top men there to study how the professional foresters, business men and others in that heavily wooded section of North Carolina are giving real impetus to the "Keep Green" program. The net result was that the U.S. Forest Service's representative left the coastal area with the announced determination of taking what he called "the New Bern approach" to the "Keep Green" movement to the other Southern States. The New Bern plan is also being extended into other areas of the state.

"Forests For Profits" is another project of the N.C.F.A. It has five key objectives, namely:

- 1.) To advocate simple, minimum, sound timber cutting practices and adequate fire protection for North Carolina forest lands;
- 2.) To obtain the adoption of these approved cutting and protection practices by sawmills, pulp-mills and other wood-using industries;
- 3.) To support research and education leading to improved forest practices and wood utilization;
- 4.) To sponsor the development of more and diversified markets for timber;
- 5.) To provide a focal point for the coordination of the activities of all forest agencies in North Carolina.

The Association is now working on a program to develop the best type of cutting practices to be used in each of the major timber stands in North Carolina so that the state's forest lands may be kept continuously productive.

"We, in the Forestry Association, feel that water resources and forestry are tied hand in hand in that the primary consideration in any water resources policy is proper management in the watersheds," President Wolcott recently wrote one of North Carolina's best known bankers in replying to the latter's request for in-

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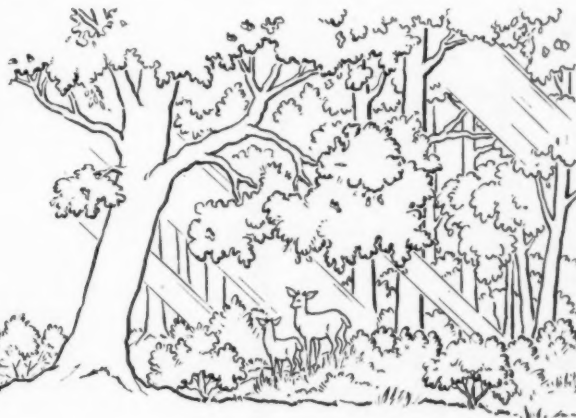


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600 Voices

(From page 50)

formation concerning the purpose of the N.C.F.A.

President Wolcott is hopeful the water resources committee will have a report ready for submission to the joint convention in Asheville.

It is interesting to note another paragraph—the closing one—of President Wolcott's letter to the inquiring banker. It follows:

"I believe you will agree that the North Carolina Forestry Association has a very full program and one that is very important to the forest resources of the state. Forestry, and its allied industries, is the second largest industry in North Carolina and the Forestry Association is the one Association in which industry and commerce can be represented in forestry matters in North Carolina. I believe you will agree that this program that I have outlined to you deserves the support of everybody who has any interest at all in industry in North Carolina. We talk of the textile and tobacco industries in this state, but if you will stop to consider the vast amounts of wood fibre used by these two industries in packing and shipping cases, you will agree that they are also the major users of forest products."

Cherokee Soil

(From page 27)

tottering. And then gold was discovered on their land. With the discovery the Indian's last hope crumbled, for it spurred their enemies in a move to rout them from the coveted land.

A handful of greedy Indians was tricked into signing a treaty in 1817 providing for the removal of the Cherokee from the Great Smokies to territory that is now Oklahoma. Rage swept the majority of Cherokee chieftains when they learned of the pact.

Finally, after years of bickering and fighting, it was agreed the Cherokee should be paid \$5,000,000 for their lands. General Winfield Scott was named to force the removal. With 7000 troops, he moved into the Cherokee country in May, 1838, and began disarming the Indians.

The soldiers built stockades in the valley into which were herded

(Turn to page 54)

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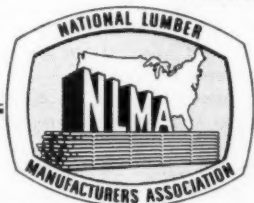
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Cherokee Soil

(From page 52)

the first of 17,000 Cherokee. Patrols with gleaming bayonets went into the coves and up the rivers to fetch the Cherokee from their cabins. A lawless rabble followed on the heels of the soldiers, looting and burning.

Far up one of the streams, deep in the wilderness of the Smokies, lived an Indian named Tsali, a simple nobody who was destined to make history by the merest accident. When at last the soldiers came for him, he gathered about him his wife, two sons and his brother-in-law and set out for the nearest stockade.

Perhaps the pace was too fast or the trail too steep, but Tsali's wife stumbled along the way. A soldier roughly prodded her with a bayonet to quicken her pace. There was a sudden spoken word of Cherokee. Tsali and his kinsmen leaped upon their captors and after a brief, furious struggle, one soldier lay dead and the others had fled.

Tsali led his family to a secret cave under the brow of Kuwahi (Clingman's dome), highest peak in the Smokies, an area that today is still one of the wildest areas in the Park. There they hid from the soldiers, just as many Cherokee who escaped from the stockades burrowed into hideouts.

Meanwhile, some 5000 of the imprisoned Cherokee began the long trek westward by boat and raft down the Tennessee to the Ohio and thence to the Mississippi. A few months later 13,000 others—an entire nation with the exception of about a thousand still hiding in the mountains—set out overland on a march into exile that, in its total sum of death and misery, has no parallel in American history. Historians called it "The Trail of Tears."

Then the soldiers turned to the task of rounding up the fugitives. Particularly did they want Tsali, because he had killed an American soldier. The general knew, however, it would be suicidal for his men to attempt to dislodge them from their hiding places. He called in William H. Thomas, a white trader and the adopted son of a Cherokee chief.

"Find Tsali," the general said. "Tell him if he will surrender and pay the penalty for the death of the soldier, I will intercede for the fugitives and have the government grant them permission to live in the Great

(Turn to page 56)



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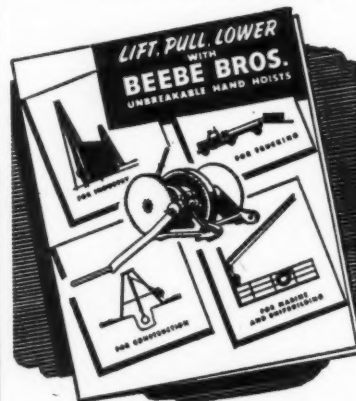
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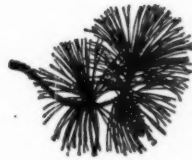
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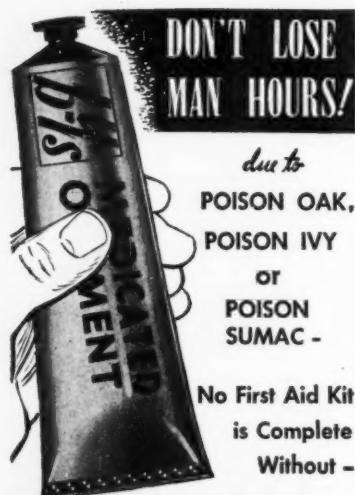
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Sacred Cherokee Soil

(From page 54)

Smokies. If he refuses, I'll turn loose my soldiers to hunt down each one of them."

Thomas carried the ultimatum to Tsali.

"I will come and my family with me," Tsali said.

And so it was that Tsali stood before a firing squad.

Because of Tsali's sacrifice, the Cherokee race lives on in its ancient home there in the Great Smoky Mountains.

The story of Tsali is one of the great true stories of America. It is the greatest thing in the Smokies—the most magnificent. And it is living again in the Oconaluftee Valley.

Each summer from late June through early September the story of Tsali and the story of the Cherokee is re-created nightly except Monday in the outdoor historical drama, "Unto These Hills," at Mountain-side Theatre above the village of Cherokee.

Descendants of the Cherokee who lived the story, including the great-grandson of Tsali—72-year-old Joseph Washington—are cast in the

play which in three years has been seen by more than 400,000 persons.

The re-creation of this story has been made possible by the Cherokee Historical Association, a non-profit organization dedicated to perpetuate the history and traditions of the Cherokee Indians.

Only recently the Association opened a re-created 200-year-old Cherokee Indian village, inhabited by descendants of the aborigines, so posterity can see what life was like before the white man pushed into the American wilderness.

There inside the compound Indian men, women and children carry out an ancient way of life—weaving cloth, making baskets, chipping arrowheads, fashioning bows and arrows and dugout canoes, and molding pottery.

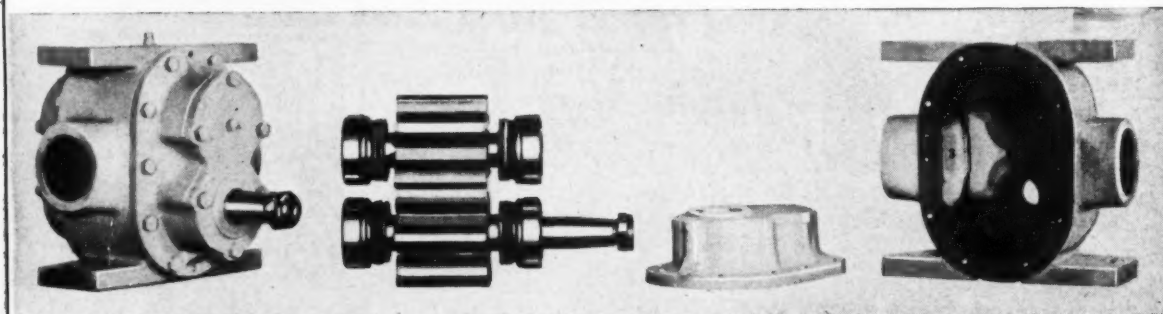
This "living museum" is known as "Oconaluftee Village," an ancient Cherokee town that existed four miles west of Cherokee and was visited by William Bertram in his travels through the Smokies in the 18th Century.

Also maintained by the Association is the Museum of the Cherokee Indian, which houses one of the finest collections of Indian artifacts in America.

During early October the Cherokee themselves stage their annual fair, a colorful five-day festival which attracts thousands of visitors to the

(Turn to page 58)

POPULAR WITH FOREST FIRE FIGHTERS . . . HALE TYPE H & 2HB



Because of their simplicity, efficiency and ease of maintenance many forest fire fighters use Hale H or 2HB Rotary Booster Pumps (capacity 100 and 200 USGPM at 120 P.S.I.). They are driven by power take off from truck transmission, using water tank mounted on truck for source of water; or pumping from draft when other source of water is available. An effective weapon against all types of forest fires.

Send today for Bulletin #178 to:

HALE FIRE PUMP COMPANY
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NOT IN WOODED AREAS, *Please!*

When Mrs. O'Leary's cow kicked over the kerosene lamp, her owner had no idea that such a simple incident would set in motion a chain of fires that would lay waste to vast sections of the city of Chicago.

We have a suspicion that the motorist who flicks a lighted cigarette from the window of his car while driving through Georgia's magnificent forest areas doesn't realize that this simple act of thoughtlessness could start a forest fire that might destroy millions of trees, homes and business structures, wild life, and possibly lives.

Union Bag & Paper Corporation and other concerns comprising the state's rapidly developing forest products industries are growing more trees for tomorrow. If these young trees are to provide jobs, payrolls, and urgently needed products in the future, they must be protected from fire.

Won't you please cooperate with us by snuffing out your cigarette in your car ashtray and encourage others to adopt this sound forest fire prevention practice?

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MESSAGES
ON
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General's exclusive feature is the double nozzle finger tip control which changes straight stream to fog spray.



For the Forest Fire Fighter, this special model has 200 G.P.M. Power Take-off Pump and five compartments on each side... a 200 gallon booster tank and 600 ft. hose capacity.

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General's linen Forestry Hose is treated to forestry specifications... large stock available for immediate delivery.

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- ★ Double nozzle, finger tip control changes straight stream to fog spray. *An exclusive feature of GENERAL.*
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Cherokee Soil

(From page 56)

Oconaluftee Valley. Down from the coves and slopes of the Smokies they come to laugh and play and display the work of their hands.

The womenfolk display canned bear meat and crab apple juice and loaves of bean bread wrapped in green corn leaves. And with their products of the land they display the products of their hands—baskets and blankets, pottery and jewelry, clothing and furniture, wood carvings and bead work. They sing songs in their native tongue, they dance the old tribal dances, and they play stick-ball, the roughest, toughest sport known to man.

Capital of the Cherokee domain, which lies in Swain and Jackson counties and is reached by U. S. Highway 441—it traverses the North Carolina side of the Great Smoky Mountains National Park to Newfound Gap—is the village of Cherokee, a village that has mushroomed overnight into another Sutter's Mill.

There in Cherokee the tribe's domestic matters are administered by a chief, assistant chief, and a tribal council, all of whom are elected. The lands are held in common for the tribe under supervision of the Office of Indian Affairs. The Cherokee may trade or sell land among themselves but never to a white man or a non-member of the tribe.

The rights of the Cherokee were established by an act of the North Carolina legislature in 1889 but their legal status is still somewhat involved. They are at once wards of the United States Government, citizens of the United States, and a corporate body under State laws.

They receive no direct monetary relief from the government. However, the government maintains a school for them and a staff of forestry and agricultural experts to advise and teach them.

Until recently their only livelihood was from the sale of their handicrafts and their farm produce. But with the opening of the Cherokee drama, "Unto These Hills," they have gone into the tourist business.

The biggest boon to the Cherokee has been the Cherokee Historical Association which, through a series of projects, has done much to raise the economic standard of the tribe.

For the Cherokee the glory and misery of the past are but a dim memory. To the old men of the tribe

MEMBERSHIP NOMINATIONS

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The AMERICAN FORESTRY ASSOCIATION,
919 17th Street, N. W., Washington 6, D. C.

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Thousands of cords of salvage wood have been removed by International Paper Company from this devastated area.



Clean-up work by the Forest Products Industries has greatly reduced the hazard of forest fires and insect epidemics in the blowdown area.


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REFORESTATOR Mechanical Tree Planter



Manufactured by
L. W. MERIAM CO.
Elsie, Michigan

Cherokee Soil

(From page 58)

they are only a peg on which to hang a tale. The young have little time for tales—their eyes are glued to the pursuits of the present.

Not long ago an old Cherokee preacher got to talking about the trials and tribulations of the past. From the doorstep where he sat he could look out across the peaceful valley and beyond where the peaks of the Smokies towered amid a blue haze, up there toward Clingman's Dome where Tsali had his hideout.

"But in the end all was well," he said. "It happened like the Bible said."

And then he quoted a passage from Psalms.

"The mountains shall bring peace to the people, and the little hills, by righteousness."

Classroom

(From page 29)

One boundary line agreement required 57 signatures.

Game regulations were unknown on these lands and when hunting controls were initiated a general resentment resulted. One old time hunter said "Tain't no use having a bag limit, I can't count no how." However, with restricted hunting, bag limit enforcement, and even closed seasons, the hunters have learned that game must have protection in order to have continued good hunting.

Hunting permits were sold at nominal prices and hunting days limited, usually Friday and Saturday of each week, during the open season. Extensive fires in 1950 disturbed the game to the extent that it was deemed advisable to close the forest to hunting. After two closed seasons the game situation appears to have improved enough to permit hunting during the 1952 season. Indications are that deer, bear and other game are present in sufficient numbers to insure satisfactory bags.

The forest was acquired for the use of the Forest School and it is serving as a demonstration and experimental field laboratory. The Junior class spends the spring term of the year in the forest. A student camp, consisting of dormitories, classrooms, dining hall and other facilities is located on the forest. Classes in forest inventory, forest industries, management, field silviculture, and

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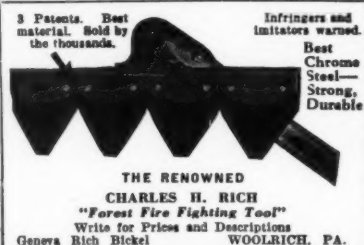
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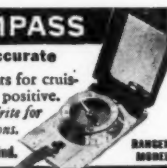
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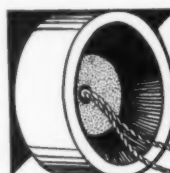
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fire protection are taught in the camp. Graduate students carry on research projects.

In order to organize the area for recording timber stands, growth, and general features the forest is divided into ten blocks. A block contains 25 square miles and the block lines are on the primary points of the compass. The forest boundary is irregular and only the sections within the forest boundary are cruised. Each class cruises one block and compiles the results.

Separate maps are made to locate the merchantable timber, pulpwood or pole size, and reproduction. By this method the entire forest is covered every ten years and a complete ten-year inventory is recorded. All cutting areas, fires, improvements, etc. are shown and used for comparisons with the past ten-year records and will be checked by the cruise ten years later.

Aerial photographs are used in the cruise and the ground checks bring out the many advantages and emphasize the problems presented by aerial photographs. The students get some first hand experience in fire fighting, sometimes all too realistic, as evidenced by a party, caught in an onrushing head fire, when one of the boys enclosed a message in his boot hoping that it would be found if he were overtaken by the fire.

Fires in the coastal plains do not develop into crown fires, except occasionally in local areas. Flames do not reach through the tops of trees unless they are fed by material in the understory or on the ground. Fire fighting equipment has been improved, especially through the addition of heavy equipment. Radios are installed in the fire towers and on the patrol jeeps, tractors and plows, on portable power pumps, and all equipment used for prevention and suppression.

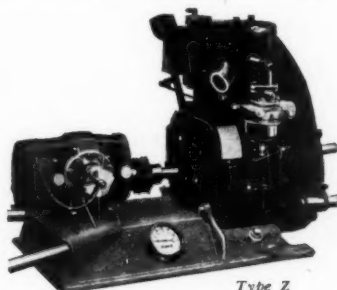
Two fire towers on the forest overlook the entire area and are in contact, by radio and telephone, with all towers in this section of the state. Nearby towers are in view which enables the operators to locate fires by cross shots. Standby crews are at the towers and at the headquarters ready to start to a fire the moment the smoke is reported by the towerman. Cooperation with the State Forest Service is by means of a Fire Protection Association through which the costs of fire prevention and suppression are equally divided.

The State Forest Service maintains a ranger at the forest headquarters, who is in charge of the fire program. Airplanes are used in locat-

Pacific Pumpers Built 30 Years Ago Still Giving Good Service

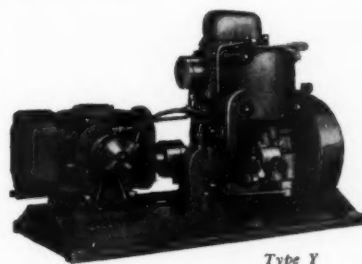
Earliest models, as well as famous Type Y Pacific Pumpers continue to be popular and serviceable many years after introduction . . .

BACK IN 1923, the first Pacific Pumper was introduced. At that time, the use of an efficient pump light



Type Z

enough to be carried by hand into rugged terrain yet powerful enough to deliver an effective flow of water for combating forest blazes was a startling innovation. Many of the early Pacific Pumpers are still in service and are still the standby of fire fighters . . . mute testimony to the dependability and stamina built into all Pacific Pumpers, from the first model to those of the present. Such a record could be achieved only because Pacific Pumper continues to supply parts for even the earliest models.

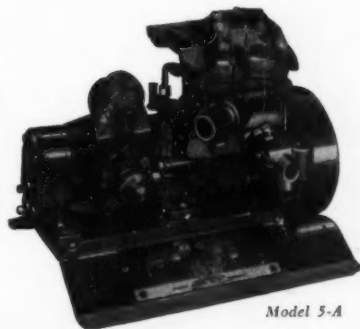


Type Y

Then came the most powerful unit ever built for its weight and size, the famous Type Y Pacific Pumper. Embodying the improvements made possible by years of engineering research

and thousands of practical field tests, the Type Y Pumper quickly won the approval of fire fighters and fire fighting authorities. Still available and still the favorite of many of the nation's experienced fire fighters, the Type Y Pacific Pumper was designed for the hardest forest fire control work . . . and has also been found ideal for fire protection in communities, resorts, on estates; for protecting right of ways, bridges, trestles, snow sheds and other types of property.

For the Type NY, widely known as the Navy's "Handy Billy" during World War II, parts are kept in stock in answer to the needs of civilian users.



Model 5-A

During the post-war years, the new models of Pacific Pumper have become even lighter, more compact and durable and more versatile for a variety of purposes. At the request of fire fighters for an efficient unit for air transport, the Pacific Pumper, Model 5-A, was introduced. Weighing only 38 pounds, Model 5-A embodies maximum portability on foot, by truck or by air. Proved in use by public and private forest fire protection agencies, Model 5-A offers the choice of two pumps for volume up to 32 g.p.m. or for pressure up to 275 p.s.i.

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ing and mapping fires. The program is developed through cooperation but the State Forest Service is responsible for the administration.

The forest was purchased at an agreed purchase price. No funds have been supplied by the state or college, so projects can be undertaken or advanced only when funds obtained from the forest are available. The original purchase plan called for definite payments of principal and interest over a term of 30 years. After five years a cash settlement was agreed upon and serial bonds were issued to pay all obligations.

In selling the self-liquidating bonds, I found many financing agencies ready to accept any security, except trees. It was interesting to see how the present material values determined the worth without considering future possibilities. The bonds are supported by timber, mature and growing, but have no other sponsor. All of the bonds were sold to individuals and banks and insurance companies. The principal and interest have been paid on schedule and the bonds at present are rated far above par.

During the first period of operation, timber sales were made to ground sawmills. The Foundation owned and operated one of these mills. Income was uncertain and payrolls and payments were difficult to meet. Later a contract was made with the Williams-McKeithan Lumber Company of Lynchburg, Virginia

which provided for payments at specified dates, regardless of the amount of timber cut. The payments were sufficient to meet the principal and interest and such obligations as fire protection and administration but did not provide funds for development.

In 1945 the Halifax Paper Company of Richmond, Virginia, purchased the Williams-McKeithan contract when the agreement for timber rights on the forest was made with the Foundation. This agreement covers a term of 99 years and includes the production of the forest up to 45,000 cords annually. Production above this amount may be purchased at the option of the Paper Company.

Forest management and development of the area are directed by the Foundation. Timber sales provide funds for road building, drainage, fire protection, administration and other expenses. When expenses are more than receipts from timber the paper company advances funds until such time as the deficit is made up. The program is mutually developed and approved which safeguards the expenses and income, as to amounts and application.

When the forest was acquired by the Foundation it was undeveloped and inaccessible, consequently drainage and road building were most essential. A study of the area showed that 69 miles of primary canals, with roads on the spoil banks, and more than 200 miles of secondary canals and roads were needed to develop the forest. Thirty-eight miles of primary canal, 16 to 18 feet wide at the top, four feet wide at the bottom and six feet deep, and about 50 miles of secondary ditches and roads have been completed.

The forest includes pocosins, which are saucer shaped formations, surrounded by rims of land, containing undrained areas at a higher elevation than the surrounding country. This formation has been the principle factor in determining species on the area. More than 90 percent of the timber is pond pine, although many species are found in mixture.

Local areas contain stands of longleaf pine, loblolly pine and a variety of hardwoods. The timber types are controlled by drainage and fire. Pond pine survives in undrained areas where loblolly and longleaf do not thrive. In areas where these species would naturally occur in mixture, pure pond pine stands are often found, due to fire.

For reasons unknown, pond pine

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is able to survive hotter burns than any other pine species.

Pond pine grows best on moist, well drained areas, but it is generally found in wet undrained areas where other species of pine do not survive. Soil types are important in determining the kind of timber found on any section. The range of soil types is important in determining the kind of timber found on any section. The range of soil types from organic loam to sandy clay loam and heavy clay, combined with varying degrees of drainage, offers a wide variety of conditions.

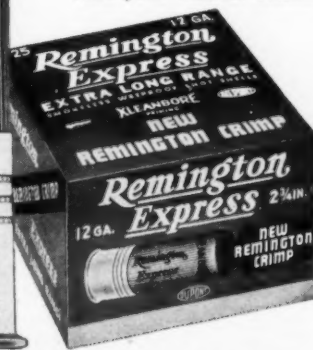
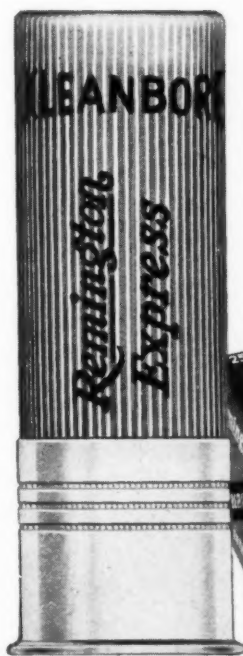
The growth of all species will be improved through drainage and fire protection and many areas now covered with stunted pond pine will be excellent timber growing sections. Not only will the growth rate increase but many areas will change to other species. Loblolly pine will come into areas which are now in pond pine.

The forest contains more than 100,000,000 board feet of growing timber of merchantable size. Cutting should be heavy in order to remove the decadent and fire injured trees and permit restocking with thrifty young stands. The present cutting practice is the seed tree method in order to remove all merchantable timber. The cutting will be accelerated as the development and accessibility progress.

Grazing beef cattle on the reed beds of the forest was proven feasible and economical during the period of 1937 to 1945. The grazing experiment was conducted by the animal husbandry department of North Carolina State College with a herd up to 300 head. Reed areas can be grazed nearly all year by alternating pastures, and beef can be produced at a lower cost than by other methods.

Soon after the forest was acquired a group of North Carolina State College forestry graduates proposed naming it "The Hofmann Forest," which proposal was approved by the Foundation Board of Directors. However, the members of each class, after wading through swamps, green-briars and snakes in cruising the block of timber assigned to them, have a variety of names for the forest which may be expressed verbally only.

The objectives of the entire program are to provide a field laboratory and to demonstrate to students and landowners some procedures in acquiring, developing and managing forest areas without financial aid other than revenues derived from the forest.



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AFA OFFICERS ARE NOMINATED FOR '53

The Committee on Elections of The American Forestry Association, chosen to nominate a slate of officers for the Association for 1953, has submitted the following list of names which will appear on the election ballot to be mailed to all members on or before November 1. Ballots must be returned to the Association on or before November 30.

For *President*, Don P. Johnston, Wake Forest, North Carolina. Mr. Johnston has served as president of the Association during the year 1952, was president of the North Carolina Forestry Association from 1948 through 1951, and a director of AFA from 1947 through 1951.

For *Treasurer*, John M. Christie, vice-president, Riggs National Bank, Washington, D. C. Mr. Christie has been AFA treasurer since 1949.

For the six *Directors*, the Committee on Elections has submitted a slate of nine from which to choose, as follows: D. C. Everest, Wisconsin, chairman of the board, Marathon Corporation; Karl T. Frederick, New York, chairman of the board, New York Conservation Council; James J. Stor-

YESTERDAY, TODAY, TOMORROW...



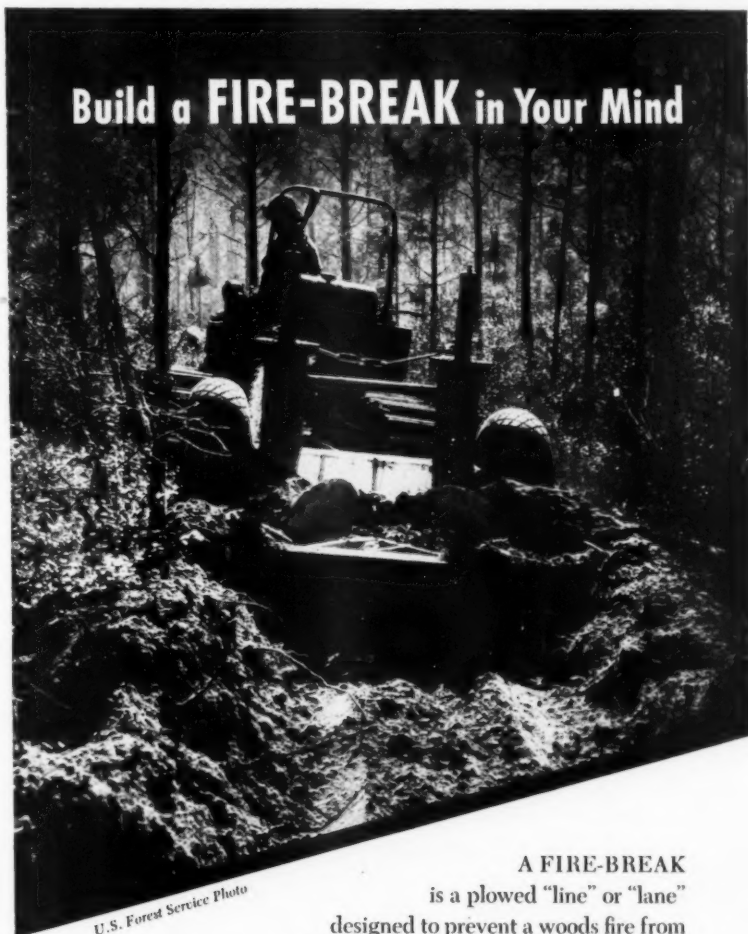
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row, New Hampshire, treasurer, Society for the Protection of New Hampshire Forests; George O. White, Missouri, state forester, Missouri Conservation Commission; P. R. Camp, Virginia, Camp Manufacturing Company; Charles H. Sage, Wisconsin, vice-president, Kimberly-Clark Corporation; L. F. Whittemore, New Hampshire, president, Brown Company; Leonard Carpenter, Minnesota, president, McCloud Lumber Company; E. L. Demmon, North Carolina, director, Southeastern Forest Experiment Station, U. S. Forest Service.

For the 21 *Honorary Vice-Presidents*, the Committee has selected the following: Ovid Butler, Maryland, executive director emeritus, The American Forestry Association; Ross Farrens, Florida, president, Farrens Tree Surgeons, Inc.; E. J. Condon, Illinois, director, public relations, Sears-Roebuck & Co.; James G. Eddy, Washington, founder, Institute of Forest Genetics; Stanley G. Fontanna, Michigan, dean, School of Natural Resources, University of Michigan; Dr. George A. Garratt, dean, School of Forestry, Yale University; Christopher M. Granger, Maryland, retired U. S. Forest Service official; William B. Greeley, Washington, vice-president, West Coast Lumbermen's Association; Joseph E. McCaffrey, South Carolina, International Paper Company; Henry T. McKnight, Virginia, vice-president, Forest Farmers Association Cooperative; Hon. John McSweeney, Ohio, former member of Congress; Clyde S. Martin, Washington, chief, forestry relations, Weyerhaeuser Timber Company; Hon. Leslie A. Miller, Wyoming, former Governor of Wyoming; Fred Morrell, Virginia, formerly Washington representative, American Paper and Pulp Association; Randolph G. Pack, New York, president, Charles Lathrop Pack Forestry Foundation; Lloyd E. Partain, Pennsylvania, farm market director, *Country Gentleman*; X. L. Pellicer, Florida, vice-president, St. Augustine National Bank; W. S. Rosecrans, California, chairman, California State Board of Forestry; A. R. Watzek, Roaring River Logging Co., Oregon; William P. Wharton, Massachusetts, president, National Parks Association; Vertrees Young, Louisiana, executive vice-president, Gaylord Container Corp.

Members of the Committee on Elections for 1953 are: E. P. Stamm, Oregon, Chairman, Dr. R. J. Preston, North Carolina, and Dr. Verne L. Harper, D. C.



U.S. Forest Service Photo

Build a FIRE-BREAK in Your Mind

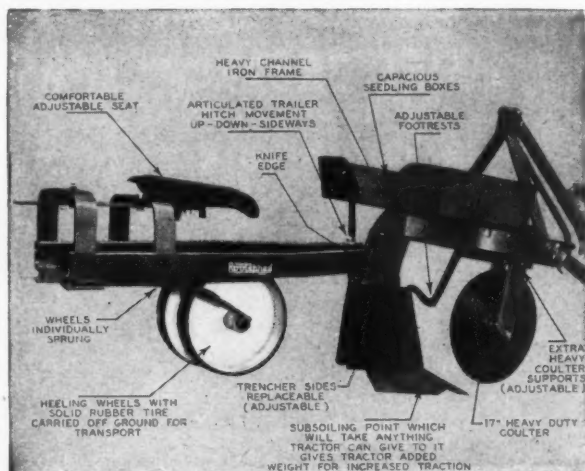
A FIRE-BREAK is a plowed "line" or "lane" designed to prevent a woods fire from starting or hungry flames from spreading *once a fire catches*. These breaks are just one of many successful fire control measures used in well-managed timberlands.

But the simple truth is that, even in tracts protected by the most elaborate control measures, far too many trees become fire victims. How much simpler it would be if, in some way, these fires could be prevented from starting at all!

Forest fires are mainly man-caused — more than 90 per cent of them, in fact. If man starts fires, we must look to him to prevent them. We can do this if every person in America builds a fire-break in his mind—if he *thinks, practices and preaches* fire prevention around the clock.

If you need help to build your mental fire-break, here's some material for you: In America each year fire destroys hundreds of millions of dollars' worth of valuable timber, more than the entire pulp and paper industry uses to manufacture the thousands of useful and necessary items you enjoy in your daily life. And even worse, these same fires destroy millions upon millions of little trees upon which the nation depends for tomorrow's trees, countless jobs and urgently needed end products.

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ROOTSPRED

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Cottonwoods

(From page 11)

the air by helicopter. Such machines were not dreamed of in 1893.

Henry Jones doesn't recall too much of that early day venture on historic "No Name" island below Harrisburg, but he does recollect that he earned \$1.50 for a ten-hour day; not bad for an 18-year-old boy. He remembers he took his turn with skillet duty. He also got \$4 a thousand for pulling seedlings from gravel bars in his "spare time."

Jones made only the one trip upriver on a planting expedition, for he got a job on the company's log rafts above the falls at Oregon City and stayed until 1945 when he retired with a 50-year gold medal and a comfortable income as a retired associate of Crown Zellerbach. This retired associate program is another "first" for the progressive paper firm, this time in employee relations in place of their better known achievements in forestry.

Unquestionably the most active and best memoried of the small group of men still alive who worked in this pioneer forestry program is Emory J. Noble, 72-year-old Oregon



City attorney, who was born at near-by Stafford in 1880. Noble was foreman of planting crews for three years and in 1908 took a crew of ten Greeks up to Grand Island and planted about 90 acres. Noble seems to have been a good "working forester" for he early discovered the nursery-raised stock was scrubby and larvae got down in the stems retarding the seedling growth. After the first year he planted only slips cut on the planting site and seedlings pulled close by.

Grant Criteser, the west's first nurseryman, lives today directly across the river from the site of the old Rock Island nursery. He has lived there on the old Criteser homestead since 1875. He was born in Missouri in 1865 and was brought to Oregon by his parents in 1872. He is another proud 36-year veteran of Crown Zellerbach's log boom grounds and a retired associate, having worked from 1898 until 1934 when illness forced his withdrawal from river life.

"My job was to develop cottonwood slips into rooted stock," the friendly oldster recalls today. Tall cottonwoods have taken over his once thriving nursery, but he points out the exact site across a few hundred yards of river water.

"A slip was a piece of live, bark-covered cottonwood about a foot long and an inch thick," he explained. "It had to have two or three buds. I would stick the slip in the ground in rows, covering about two-thirds of the slip with soil. The rows were wide enough to permit cultivating with a horse and cultivator. It took about a year for the roots to develop. Then, I'd dig them up, ball up about 50 seedlings together, wrap them in burlap and load them on the sternwheelers for the trip upriver to planting crews."

Today there is much evidence of success of these early day, trial-and-error forestry projects. Probably two of the biggest and best of the plantations are the ones on Grand Island, where a fine 90-acre cottonwood forest is growing today, and another on Pudding River where a 220-acre planting contains a remarkably fine stand of black cottonwood timber.

Quite a number of the plantations have already been harvested and third and fourth growth crops are adding size each growing season. One beautiful stand of cottonwoods, planted just before the end of the century, was harvested in 1922 and 1923 and the large logs were sliced

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Best Wishes To
The American Forestry Association
And May You Have A
Constructive Annual Meeting
From

**SOUTHLAND PAPER
 MILLS, INC.
 LUFKIN, TEXAS**

*(Annual production of newsprint 130,000 tons.
 The first mill to make newsprint from Southern Pine.)*

and peeled for veneer for the furniture industry.

Cottonwood was a pulp tree when it was first propagated by man in this region in 1893. In the ensuing years it has become more valuable for furniture lumber and veneer. Conifers, especially hemlock and spruce and in late years Douglasfir, have become the prime pulp trees. Emphasis of the Crown Zellerbach firm now in its reforestation work is on conifers, pointing up the changing pattern of wood use. Some forestry experiments are in the field of hybrids, for who knows, the pulpwood of the future may come from a tree that will grow to a foot in diameter in ten years and may be a species that man creates.

By most methods of appraisal and evaluation the early-day forestry experiments in cottonwood planting and nursery tree raising by this company must be classed as eminently successful. Even at the high price of \$105 an acre for restocking, present stumpage values vindicate Johnny Walker's faith in reforestation.

More important even than the monetary and economic success of these first plantations is the leadership and courage provided by Johnny Walker in stepping along new trails and proving to subsequent generations of foresters that nature could use a hand in replenishing forests harvested by man.

When he undertook this rather daring experiment in forestry, cottonwoods were the No. 1 wood for newsprint-making and the supply was becoming increasingly critical. The first purchase of conifers was made by the company in 1893, but no one then was willing to rely completely on conifers for pulpwood.

Present plans for managing the cottonwoods call for cutting as the trees mature and thinning when needed. Cottonwoods mature in about six decades or less and it is wise to harvest them at maturity to avoid loss. The wood is being used for furniture, but small quantities are being cut even today for pulp making. Its short, thin fibres blend well with the long, coarse fibres of the conifer wood and makes an idea pulp for book papers. The short fibres fill in the spaces and make a smoother sheet.

Those young men of 58 years ago, Henry Jones, Emory Noble, Grant Critser, Johnny Walker and scores more, launched a mighty program. They are a modest group, like most pioneers.

Unsung Johnny Walker, scoffed at

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Photo: Rhododendrons planted 3 yrs.
Insert: Kalmia, on arrival.

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FALL 1952 CATALOG

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Fine Young Plants, 12-in. High. Slender now, will grow bushy. Small Ball of earth. Pay express (about 8c a plant) on arrival.

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ALSO LARGER: Any five of above 1½ ft. BB bushy specimens (4 years older, 12 times heavier) for \$16.75.

OFFER A

5 each of 4 named varieties at left
20 plants
\$14.50

OFFER B

25 each of 4 named varieties at left
100 plants
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Bargains in Sturdy Young Shade Trees

All these varieties will grow 50% better next summer if planted this fall instead of next spring. 5 of one kind at 10 rate, 50 at 100 rate.

	(10)	(100)		(10)	(100)
ACER (Maple)			POPLAR Carolina	4-5 ft.	10.00 85.00
Rubrum (Red Maple)	4-6 ft. \$15.00	125.00	Lombardy	5-6 ft.	6.50 55.00
6-8 ft.	18.00	150.00	Bolleana	4-5 ft.	11.00 95.00
saccharum (Sugar Maple)	4-6 ft. 14.00	125.00			
6-8 ft.	20.00	180.00	QUERCUS (Oak)		
BETULA alba (White Birch)	2-3 ft. 8.00	60.00	Palustris (Pin Oak)	5-6 ft.	25.00 160.00
populifolia (Gray)	4-6 ft. 15.00	95.00	Borealis (rubra) Red Oak	5-6 ft.	25.00 160.00
papyrifera (paper)	4-5 ft. 18.00	125.00			
CORNUS florida (Dogwood)	4-6 ft. 22.50	180.00	SALIX (Willow)		
JUGLANS nigra (Walnut)	4-5 ft. 11.00	80.00	Babylonica (Weeping)	4-5 ft.	9.50 85.00
LIQUIDAMBAR (Sweet Gum)	4-5 ft. 14.00	120.00	Wisconsin (Hardy Wpg.)	4-5 ft.	9.50 85.00
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			TILIA (American Linden)	4-5 ft.	15.00 120.00
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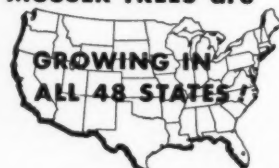
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Cottonwoods

(From page 68)

by less wise men, reprimanded by his superiors for excessive spending, deserves a niche in conservation's memory book. His courage unquestionably laid the groundwork for tree farming and forest conservation, if only because it accustomed one company to forestry thinking, a company which was to take the lead in the enlightened conservation program now generally accepted by tax-paying forest landowners throughout the nation.

Johnny Walker was a forestry zealot. He was a man with a dream and with the courage to be different.

Tailor-Made Trees

(From page 17)

longer think of the forests as a limitless resource to be exploited as quickly as possible.

For example, they have coined the name "Tree Farms" to indicate that they are thinking of timber as a crop—a crop to be carefully managed from seed to sawmill. In some cases, management actually begins before the seed. That is, the trees chosen to be the parents of our future forests are carefully scanned for their eligibility, their family history, even before the cones are harvested.

In this way, trees may be partially predestined to make a better forest. Geneticists go even a step farther. Like Burbank, they create new strains and varieties of trees.

After the stands are established, either by planting or by seeding, more control or training, more tailoring takes place. The growing young trees are protected from fire, disease, and insects. They are thinned to proper spacing to promote better form and faster growth. Often they are pruned to stop the development of knots. Later they may be given stand improvement cuts, and other kinds of treatment intended to make a finer forest.

All this calls for research, for long-range planning, for wise management, and for a fundamental faith in the future. And even then, it is only a beginning—a beginning, however, that may well become a milestone of a new era in American forestry. Who knows? Perhaps the foresters and scientists, if given enough time, will eventually turn up with Paul Bunyan's tailor-made dream tree after all.

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An integral part of Gaylord's very foundation is our 75,455 acres of planted slash pines, part of our forest holdings in Louisiana and Mississippi. This winter we plan to plant an additional 13½ thousand acres. Our goal for the next ten years is 80 million seedlings to be planted on 80 thousand acres.

Our faith in the future is our faith in the South's pine forests.

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KEEP AMERICA GREEN

Editorial

"WOULD SOME POWER THE GIFTIE GIE US"

Often we disciples of conservation find ourselves at a loss for words, other than trite, to convince others why every \$5 they contribute in membership to The American Forestry Association is important to America's general well-being. That's why we're passing on this unsolicited guest editorial which Spencer Murphy, editor of *The Salisbury* (North Carolina) *Post*, published August 13.

Editor Murphy, it turns out, is an extremely talented North Carolinian, his activities having ranged from presidency of the North Carolina Symphony Society to membership on the Citizens' National Executive Committee for United Nations Reform, and of the North Carolina Library Commission. He's also a trustee of the North Carolina College at Durham (state Negro university). He has twice been awarded first prize in annual editorial excellence competition of the North Carolina Press Association.

What inspired him to write the editorial below? Perhaps the clue is to be found in his hobbies: chemical gardening and miniature trees; hunting little things in big people and big things in little people. Said Editor Murphy:

The tale of the widow's mite in Biblical literature is about as inspirational a bit of education as we know.

It comes to mind as we send our annual \$5 membership to The American Forestry Association.

Too many Americans are uninformed about some of the things that make America possible in the first place, and make it possible for them to be Americans in the second place.

For our own part, we are perennially awed by the realization that if it were not for "fishing worms," the United States would be an arid waste not capable of sustaining human life.

Have you noticed in recent weeks that the United States Department of Agriculture is screaming for Americans to buy and eat honey?

The DA doesn't care whether you eat honey or not, really; it just wants you to buy honey.

The reason it wants you to buy honey is that only a healthy demand for honey will keep a lot of people at the business of housing and caring for bees.

The reason it wants a lot of people to keep at the business of housing and caring for bees is that the bee population of the United States

is sinking dangerously low, and that bees are absolutely necessary in abundance if many of this country's principal food crops are to survive.

The bee is like the earthworm in that, more than money, more than television, more than labor unions, and more than almost anything you care to mention, it is necessary to the American standard of living.

It is a devastating thought, really.

It makes a silly out of science, an ass out of art, a boob out of big business, lice out of little business, and a miserable mewling, malcontented marplot out of the man on the street.

But we began by talking of The American Forestry Association.

Trees, too, are important.

Without trees no earthworms.

Without trees no bees.

Without trees no Democrats, no Republicans, no generals, no atom bombs—drought would be the only thing earth could supply.

Trees, you see, regulate watersheds, and ground water, and plant-food and aspiration, and clouds, and storms, and rains, and more things than you can shake the biggest stick you can handle at.

Trees, being as important as that, are worth money, of course. Naturally men wanting money want trees.

There hasn't been enough money, really, nor enough trees to satisfy the yearning of the men who have wanted money through trees as the years have passed.

That hated old thing called "control" came into the picture and stopped the money-hungry men from cutting down all the trees, and killing all the earthworms, and all the bees, and all the presidential candidates, and all the rest of us.

The American Forestry Association has had a pretty substantial part in saving your life and mine, and it doesn't have even a medal to show for it so far as we know.

Our \$5 can't help it much, we know, except to let it know we are still optimistic enough to send in a token of faith that the United States is worth keeping for a while, anyway, and—however otherwise it may appear at first-glance from time to time—the people of the United States are worth preserving as long as there is hope of God's mercy averting the fate their common course has seemed to seek.

FAMOUS INDIANS:

Bob Feller

(ACE PITCHER OF THE CLEVELAND INDIANS)

'PUTS OUT THE
FIRES' with
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Bob Feller guards his rural estate with **INDIAN FIRE PUMPS** since he knows these outstanding extinguishers will take care of any emergency that occurs.

How is your supply of **INDIAN FIRE PUMPS**? Now is the time to order. Be prepared. An ample supply of **INDIAN FIRE PUMPS** is your first assurance of adequate equipment to handle all calls.

You, too, can "put the fire out" in a hurry if you have plenty of these **FAMOUS INDIANS**.



Bob Feller, famous pitcher for the Cleveland Indians and winner of 3 no-hit major league games, is expected to have another excellent year in the 1952 season.

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That's why Berke Bros. picked it from their fleet of "Caterpillar" equipment for work on this 26-foot wide Forest Service access road—an 8-mile project of the Bureau of Public Works in Zigzag, Oregon. On a haul distance of 450 feet, it averages a 6-yard load every 3 minutes. And it's on the job day after day, 10 hours a day.

Good access roads are doubly important to the future of our nation's forests. When fire strikes, they provide a

fast approach to battling the blaze. And they slash travel time to and from selected logging areas. The big yellow "Cat" D8 Tractor-8U 'Dozer team helps build them quickly, economically. For facts about it, see your nearby "Caterpillar" Dealer!

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